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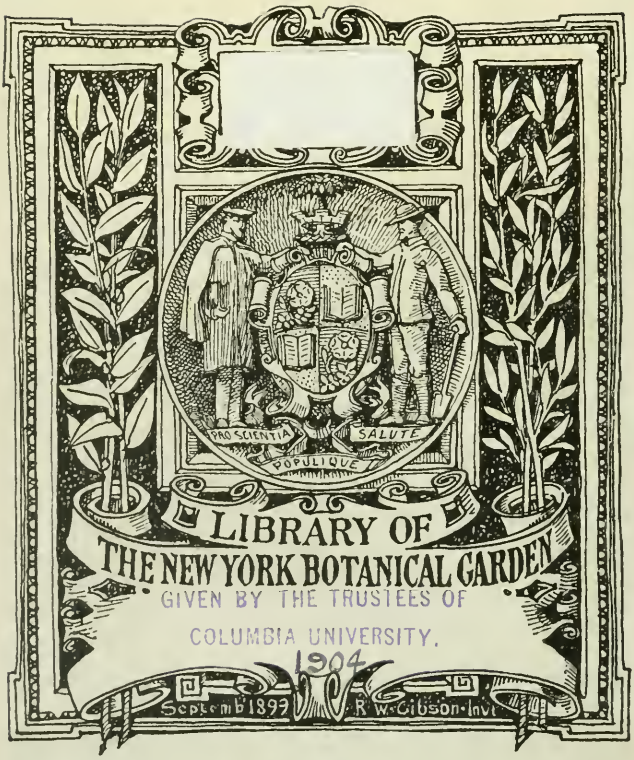

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TRANSACTIONS

OF THE

ILLINOIS

STATE HORTICULTURAL SOCIETY

FOR THE YEAR 1883.

BEING THE

PROCEEDINGS OF THE TWENTY-EIGHTH ANNUAL MEETING

HELD AT

BLOOMINGTON, DECEMBER 18, 19, 20,

ALSO PROCEEDINGS OF THE

DISTRICT SOCIETIES OF NORTHERN, CENTRAL AND SOUTHERN ILLINOIS AND OF THE KANKAKEE VALLEY, JO DAVIESS, WARSAW AND ALTON HORTICULTURAL SOCIETIES FOR THE YEAR 1883.

NEW SERIES—VOLUME XVII.

Edited by Lennington Small, Secretary of the Society for 1883.

Published by the Society.

T. W. Franks & Sons, Printers and Binders, Main St.

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REPORT TO THE GOVERNOR.

To his Excellency, JOHN M. HAMILTON, Governor of Illinois:

I have the honor herewith to submit the Seventeenth Volume of the new series of Reports of the Illinois State Horticultural Society, containing a statement of the receipts and expenditures for the year.

Yours, very respectfully,

LENNINGTON SMALL, Secretary,

Illinois State Horticultural Society for 1883.

KANKAKEE, ILL., March 28, 1884.

FEB 16 1904

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Officers for 1884.

President.—John M. Pearson, Godfrey.
Vice President.—H. K. Vickroy, Normal.
Secretary.—A. C. Hammond, Warsaw.
Assistant Secretary.—H. M. Dunlap, Savoy.
Treasurer.—S. G. Minkler, Oswego.

EXECUTIVE BOARD.

J. M. Pearson ..... President State Society.
A. C. Hammond ..... Secretary State Society.
S. M. Slade... President Horticultural Society of Northern Illinois.
A. Bryant, Jr., Vice President Horticultural Society of Northern Illinois.
H. M. Dunlap.. President Horticultural Society of Central Illinois.
A. G. Humphrey, Vice President Horticultural Society of Central Illinois.
E. A. Riehl... President Horticultural Society of Southern Illinois.
G. W. Endicott, Vice President Horticultural Society of Southern Illinois.

AD-INTERIM COMMITTEES.

Northern Illinois.—S. Edwards, Mendota; C. H. Prescott, Marengo.
Central Illinois.—O. B. Galusha, Peoria; T. J. Burrill, Champaign.
Southern Illinois.—E. A. Riehl, Alton; Dr. J. H. Sanborn, Anna.

The Annual Meeting for 1884 will be held at the Industrial University, Champaign, Dec. 9th, 10th, and 11th, 1884.

Standing Committees.

Orchard Culture.—B. F. Johnson, Champaign; Henry Mortimer, Manteno.

Forestry.—Thomas Gregg, Hamilton; L. C. Francis, Springfield.

Vegetable Gardening.—A. L. Hays, Jacksonville; H. H. Wallace, Villa Ridge.

Grapes and Grape Culture.—E. J. Ayres, Villa Ridge; M. A. Baldwin, Jacksonville; D. J. Piper, Foreston.

Strawberries.—O. B. Galusha, Peoria; J. G. Buback, Princeton; Henry Wallace, Villa Ridge.

Raspberries, Blackberries, Currants, and Gooseberries.—H. K. Vickroy, Normal; Wm. Jackson, Godfrey; D. W. Scott, Galena.

Pears.—C. N. Dennis, Hamilton; Parker Earle, Cobden; W. T. Nelson, Wilmington.

Peaches.—J. B. Spaulding, Riverton; H. C. Foreman, Alto Pass.

Plums and Cherries.—Dr. A. H. Sanborn, Anna; L. C. Francis, Springfield.

New Fruits, Trees and Plants.—J. F. Johnson, Warsaw; E. Hollister, Alton.

Gathering and Marketing Fruits and Vegetables.—R. W. Hunt, Galesburg; E. Rogers, Upper Alton.

Utilizing Fruits.—G. W. Clayson, Nunda; L. Roberts, Godfrey.

Floriculture.—Thos. Franks, Champaign; Joseph Heine, Jacksonville.

Landscape Gardening.—J. P. Bryant, Princeton; Prof. J. V. N. Standish, Galesburg.

Vegetable Physiology.—Prof. J. T. Burrill, Champaign; S. H. French, Carbondale.

Entomology and Ornithology.—Prof. S. A. Forbes, Normal; Miss Alice Walton, Muscatine, Iowa; Miss Emily A. Smith, Peoria.

Geology, and Soils as affecting Plant Life.—Wm. McAdams, Alton; Henry M. Bannister, Kankakee; H. M. Shaw, Mt. Carroll.

Horticultural Adornment of Home.—Mrs. Lavina S. Humphrey, Galesburg; Mrs. H. N. Roberts, Alton; Mrs. P. V. Hathaway, Damascus.

CONSTITUTION AND BY-LAWS.

AS AMENDED AT THE ANNUAL MEETING, 1874, AND FURTHER AMENDED AT THE ANNUAL MEETING, 1882.

CONSTITUTION.

I. This Association shall be known as the ILLINOIS STATE HORTICULTURAL SOCIETY.

II. Its object shall be the advancement of the Science of Pomology and the Art of Horticulture.

III. Its members shall consist of Annual members, paying an annual fee of one dollar; of Life members, paying a fee of twenty dollars at one time; and of Honorary members, who shall only be persons of distinguished merit in Horticulture or kindred sciences, who may, by vote, be invited to participate in the privileges of the Society. The wives of members shall be members without fee.

IV. Its officers shall consist of a President, one Vice President, Secretary, and an Assistant Secretary, who shall be elected at the annual meeting, and serve until their successors are chosen; also an Executive Board, as hereinafter provided.

V. The affairs of the Society shall be managed by an Executive Board, to consist of the President and Secretary of the Society, and the President and Vice President from each of the three District Horticultural Societies of the State.

VI. The Society shall hold annual meetings, and publish its transactions annually; *provided*, there are sufficient funds in the treasury to defray the expenses of publication.

VII. This Constitution may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The President shall preside at all meetings of the Society, call the meetings of the Executive Board, and, under its direction, have a general superintendence of the affairs of the Society, and direction of expenditure of money; he shall deliver an annual address upon some subject connected with Horticulture, and shall appoint all special committees unless otherwise ordered.

II. The Vice President shall preside at the meetings in the absence of the President.

III. The Secretary, or Assistant Secretary, shall, upon the direction of the Executive Board, conduct the correspondence of the Society, have charge of its books, papers, and reports, and prepare its reports for publication; and shall receive for his necessary expenses for postage, stationery, printing, expressage, office rent and salary, such sum as the Executive Board may vote therefor.

IV. The Treasurer shall receive and keep an accurate account of all moneys belonging to the Society, and disburse the same upon the written orders of the President, which he shall retain and file as vouchers; he shall make an annual report to the Society of the receipts and disbursements, which, with the vouchers, shall be referred to a special auditing committee appointed at the annual meeting. Before entering upon his duties he shall give bond to the Society in the sum of five thousand dollars for the faithful performance of his duties: such bond to be approved by the Executive Board.

V. The Executive Board shall perform all the duties required of them by section four of the "Act reorganizing the State Horticultural Society," approved March 24, 1874. They may appoint such standing and other committees as they may deem advisable.

VI. These By-Laws may be altered at any regular meeting by a two-thirds vote of the members present.

An Act to reorganize the Illinois State Horticultural Society.

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

Section 1. That the organization heretofore chartered and aided by appropriations under the name of the Illinois State Horticultural Society, is hereby made and declared a public corporation of the State.

Sec. 2. The Illinois State Horticultural Society shall embrace, as hereinafter provided, three horticultural societies, to be organized in the three horticultural districts of the State, which shall be known as the Horticultural Society of Northern Illinois, now operating in the counties of Bureau, Boone, Cook, Carroll, DuPage, DeKalb, Henry, Grundy, JoDaviess, Kane, Kendall, Kankakee, Lake, Lee, LaSalle, McHenry, Ogle, Putnam, Rock Island, Stephenson, Whiteside, Winnebago, and Will (23); the Horticultural Society of Central Illinois, operating in the counties of Adams, Brown, Cass, Champaign, Christian, Coles, DeWitt, Douglas, Edgar, Fulton, Ford, Iroquois, Hancock, Henderson, Knox, Logan, Livingston, McLean, McDonough, Marshall, Mason, Mercer, Menard, Morgan, Macon, Moultrie, Peoria, Pike, Piatt, Sangamon, Shelby, Schuyler, Scott, Stark, Vermilion, Tazewell, Warren, and Woodford (38); and the Horticultural Society of Southern Illinois, operating in the counties of Alexander, Bond, Clark, Clay, Crawford, Calhoun, Cumberland, Clinton, Edwards, Effingham, Fayette, Franklin, Green, Gallatin, Hamilton, Hardin, Jasper, Jefferson, Jersey, Jackson, Johnson, Lawrence, Madison, Macoupin, Marion, Monroe, Montgomery, Massac, Perry, Pope, Pulaski, Richland, Randolph, St. Clair, Saline, Union, Wayne, White, Washington, Williamson, and Wabash (41).

Sec. 3. The affairs of the Illinois State Horticultural Society shall be managed by an Executive Board, to consist of the President and Secretaries of said Society, and the President and one Vice President from each of the three District Horticultural Societies; *provided*, that the eligible officers now elect of the Illinois State and District Horticultural Societies shall be the first members of the Executive Board created by this act, and shall hold their office until their successors are elected, as hereinafter provided.

Sec. 4. The Executive Board of the Illinois State Horticultural Society shall have the sole care and disposal of all funds that may be apportioned (appropriated) by the State of Illinois to sustain the Illinois State Horticultural Society, and shall expend the same in such manner as in their judgment will best promote the interests of Horticulture and Arboriculture in this State. They shall meet at Springfield, on the second Tuesday after the first Monday in January, 1875, and biennially thereafter.

They shall render to the Governor of the State a detailed statement of all funds received from the State and all other sources, which statement shall also include all expenditures made by them, and the specific objects in detail for which said sums were expended. They shall make no appropriations without having funds in hand to meet the same, and if any debt is created the members of the Board shall be held severally and jointly liable for the payment of the same, and in no event shall the State of Illinois be held liable or responsible for any debt, obligation, or contract made by the Illinois State Horticultural Society or its Executive Board.

SEC. 5. The Illinois State and the three District Horticultural Societies shall hold annual meetings, at which their officers for the ensuing year shall be elected. Within one month after the annual meeting of the District Societies, they shall forward to the Secretary of the Executive Board a report of their transactions, including a list of officers elected at such meeting. The Executive Board shall publish annually, at the expense of said Society, a report of its transactions and such other papers as they may deem of value to Horticulture and Arboriculture. Four members of the Executive Board shall constitute a quorum for the transaction of business.

SEC. 6. Members of the several District Societies shall be entitled to all the privileges of the members of the State Society, except that of voting for officers.

SEC. 7. By-laws and rules that do not conflict with the laws of this State may be passed and enforced by the several Societies herein mentioned.

Approved March 24, 1874.*

* The Society was first incorporated February 11, 1857—two months after its organization.

Names of Members,

As taken from the list of S. G. MINKLER, Treasurer.

Allen, S. A.....Bloomington.....
Augustine, H.....Normal.....Nurseryman.
Barnard, O. W.....Manteno.....Fruit Grower.
Barnard, Mrs. O. W.....Manteno.....
Baller, F. A .....Bloomington.....Florist.
Barnard, Milo.....Manteno.....Farmer and Forest Grower.
Barnard, D. E.....Manteno.....Dairyman and Farmer.
Bancroft, L. R.....Pontiac.....Gr. Small Fruits and Plants.
Baldwin, A. M.....Jacksonville.....Florist and Fruit Grower.
Bigham, J. R.....Chatsworth.....
Bone, E. D.....Bloomington.....
Bloom, H. S.....Kankakee .....Horticulturist and Farmer.
Brink, J. C.....Kankakee .....Grocer.
Budd J. L.....Ames, Iowa.....Prof. Hor. in State Agr. Col.
Burrill, T. J.....Champaign .....Prof. Hor. in Indus'l Univ'ty.
Bryant, Arthur, Jr.....Princeton.....Nurseryman.
Brown, R. M.....Normal.....
Brown, F. A.....Bloomington.....
Buckman, Benj.....Farendale .....
Buckman, J. H.....Saybrook .....
Clapp, H.....Morris.....Fruit and Vegetable Grower.
Cunningham, L. E.....Kankakee.....Fruit Grower.
Cunningham, J .....Normal.....
Cunningham, Mrs. J .....Normal.....
Curt, ——.....Bloomington ....
Curtis, B. O.....Paris .....Nurseryman.
Daves, J. W.....Osco.....
Davis, W. O.....Normal.....
Dennis, C. N.....Hamilton.....Nurseyman.
Dennis, Mrs. C. N .....Hamilton.....
Dickinson, T. C.....Kankakee.....Horticulturist.
Dunlap, H. M.....Savoy.....Orchardist and Mf. of Cider.
Edwards, Samuel.....Mendota .....Gr. Small Fruits and Plants.
Earle, Parker.....Cobden .....Fruit Grower.
Ellsworth, L.....Naperville.....
Ellington, H. A ..... Hyde Park .....
Emerson, F. M.....Bloomington ....
Ennis, J. B.....Normal.....
Fulkerson, W. H .....Jerseyville.....Stock Breeder.
Francis, L. C..... .....Springfield.....Farmer and Fruit Grower.
Fell, K. H.....Bloomington ....
Forbes, S. A.....Normal.....State Entomologist.
Forbes, Mrs. S. A.....Normal.....
Fell, H. C.....Normal..... ..
French, H. G.....Carbondale .....Prof. in South'n Nor. Univ'ty.
Grondyke, Samuel.....Eugene, Ind.....Orchardist.
Gatchell, A.....Quincy.....Fruit Grower.
Gaston, J. R.....Normal.....
Gibbs, O. C.....Downer's Grove. *Farmer's Review.*

Gregg, T	Hamilton	Fruit Grower.
Gregg, Mrs. T	Hamilton	
Graves, E. W	Sandwich	Nurseyman.
Graves, H. C	Sandwich	Nurseyman.
Galusha, O. B	Peoria	Fruit Grower.
Galusha, Mrs. O. B	Peoria	
Glatfelter, W. A	Minier	
Hilliard, G. W	Brighton	
Hammond, A. C	Warsaw	Orchardist, & Cider Vinegar.
Hammond, Mrs. A. C	Warsaw	
Humphrey, A. G	Galesburg	Fruit Grower and Physician.
Heinl, J	Jacksonville	
Haebert, J. E	Bloomington	
Huber, Thos	Illinois City	Vineyardist (New Grapes).
Kriebel, D. S	Reddick	
Kettle, —	Bloomington	
Kettle, Mrs	Bloomington	
Livingston, C. P	Kankakee	Prop. *Kankakee Times.*
Lufkin, H. J	Normal	
Leatron, J. H	Bloomington	
Moore, Miss Ada	Kankakee	
Mortimer, Henry	Manteno	Orchardist & Fruit Grower.
Mortimer, Mrs. Henry	Manteno	
Mathews, J. B	Marissa	Sweet Potatoes and Plants.
Minier, G. W	Minier	Farmer.
McWhorter, T	Aledo	Farmer and Orchardist.
Miller, P. E	Dwight	
Minkler, S. G	Oswego	Farmer and Nurseryman.
Miller, J. B	Normal	
McCulloch, N	Normal	
Mussen, C	Bloomington	
McKinstry, B. N	Grant Park	Nurseryman.
Nelson, W. T	Wilmington	Nurseryman and Fruit Gr.
Norris, J. H	Normal	
Orendowen, J. B	Bloomington	
Pearson, John M	Godfrey	Farmer and Horticulturist.
Pheonix, S. T	Bloomington	Nurseryman.
Phoenix, F. S	Bloomington	Nurseryman.
Palmer, A. J	Bloomington	
Penwell, Frank W	Danville	Attorney at Law.
Robison, J. W	Tremont	Farmer and Fruit Grower.
Robison, E. C	Tremont	
Robison, L	Tremont	
Riehl E. A	Alton	Fruit Grower.
Roots, B. G	Tamaroa	
Roots, Mrs. B. G	Tamaroa	
Rockwell, C. B	Hamilton	
Roney, J. T	Bloomington	
Rossney, W. E	Bloomington	Nurseryman.
Small, A. L	Kankakee	Nurseryman.
Sanborn, J. H	Anna	Hort. Ed. *Farmer & Fruit Gr.*
Spaulding, J. B	Springfield	Nurseryman.
Small, John	Kankakee	Attorney at Law.
Slade, S. M	Elgin	
Strubler, P	Naperville	Dealer in Trees and Plants.
Small, Len	Kankakee	Nurseryman.
Small, Mrs. Len	Kankakee	
Slade, Thos	Normal	

Schrœder, H	Bloomington	Silk Cult. and Nurseryman.
Schrœder, F	Bloomington	
Stanbury, E, W	Bloomington	
Stapleton, J	Bloomington	
Scott, D. W	Galena	Nurseryman.
Sells, Joshua	Bloomington	
Sells, Mrs. Joshua	Bloomington	
Swain, A	Normal	
Tuttle, Sidney	Bloomington	Nurseryman.
Taylor, A. C	Normal	
Taylor, Mrs. A. C	Normal	
Turner, J. B	Jacksonville	
Vickroy, H. K	Normal	Small Fruits and Plants.
Vickroy, Mrs. H. K	Normal	
Winslow, Peleg	Kankakee	Stock Breeder.
West, S. H	Bloomington	
Wright, C. C	Cobden	
Wallace, J. F	Normal	
Watson, W. A	Normal	
Washburn, A	Bloomington	
Willson, J. H	Bloomington	
Walther, E. W	Bloomington	
Winter, J	Bloomington	

HONORARY MEMBERS.

Prof. W. H. Ragan, of Perdue University, Lafayette, Indiana; Prof. J. L. Budd, of the Iowa State Agricultaral College; and H. J. Ludlow, of Minnesota.

PREMIUM LIST.

The following premiums are offered by the Executive Board, on fruit and other horticultural products, at the annual meeting of the Society, 1884.

Plates of fruit shall contain five specimens—neither more or less. Exhibiters and judges shall be governed by the rules published in Vol. XII of the Transactions of this Society, pp. 297–300.

Every article entered for a premium must have been grown or manufactured by the exhibitor.

Competition open to the world.

APPLES.

	1st.	2d.
Largest and best display	$25.00	$15.00
Best collection of show apples—ten varieties	10.00	5.00
Best five varieties winter apples for Northern Illinois, for market	10.00	5.00
Best five varieties winter apples for Central Illinois, for market	10.00	5.00
Best five varieties winter apples for Southern Illinois, for market	10.00	5.00
Best three varieties fall apples for Northern Illinois, for market	6.00	3.00
Best three varieties fall apples for Central Illinois, for market	6.00	3.00
Best three varieties fall apples for Southern Illinois, for market	6.00	3.00
Best collection of seedlings, or new apples	10.00	5.00
Best plate seedling, good enough to be recommended	6.00	3.00
Best plate winter apples for Northern Illinois, for market	4.00	2.00
Best plate winter apples for Central Illinois, for market	4.00	2.00
Best plate winter apples for Southern Illinois, for market	4.00	2.00
Best ten varieties of winter apples for family use	10.00	5.00
Best five varieties of fall apples for family use	6.00	4.00

Best plate winter apples for family use	$4.00	$2.00
Best plate fall apples for family use	4.00	2.00
Best plate Ben Davis	2.00	1.00
Best plate Willow Twig	2.00	1.00
Best plate Rome Beauty	2.00	1.00
Best plate Jonathan	2.00	1.00
Best plate Grimes' Golden	2.00	1.00
Best plate Rawles' Janet	2.00	1.00
Best plate Winesap	2.00	1.00
Best plate Yellow Bellflower	2.00	1.00
Best plate Smith's Cider	2.00	1.00
Best plate Winter Sweet Paradise	2.00	1.00
Best plate Wythe	2.00	1.00
Best plate Red Canada	2.00	1.00
Best plate Ryor's Red	2.00	1.00
Best plate Domine	2.00	1.00

PEARS.

Best plate Easter Beurre	$ 3.00	$2.00
Best plate Winter Niles	3.00	2.00
Best plate Glout Morceau	3.00	2 00
Best plate Vicar of Winkfield	3.00	2.00
Best plate Lawrence	3.00	2.00
Best display of evaporated or dried fruit by an amateur	5.00	2.00
Best gallon pure cider by maker	4.00	2.00
Best sample cider vinegar by maker	2.00	1.00

By order of the Executive Board.

J. M. PEARSON, *President*.

A. C. HAMMOND, *Secretary*.

TWENTY-EIGHTH ANNUAL SESSION

OF THE

Illinois State Horticultural Society

HELD AT

BLOOMINGTON, DECEMBER 18TH, 19TH AND 20TH, 1883.

The announcement of this meeting had been timely advertised by a liberal distribution of the printed programme, and by the courtesy of the public press throughout the State in calling attention to it.

December 18th, at 10 o'clock, A. M., President Hon. O. B. Galusha called to order the members present, in Schroeder's Opera House, at Bloomington, and announced that in accordance with the time-honored custom the meeting would open with prayer. In response to the President's request, Hon. A. C. Hammond made a short but eloquent and appropriate prayer, full of the beauty and power of many elegant expressions.

Dr. Schroeder, of Bloomington, was introduced by the President and made a characteristic speech, welcoming the members of the Society to the city. The Doctor's remarks were witty, entertaining and suggestive, and were greeted with hearty applause.

President Galusha replied in an appropriate manner, thanking the Doctor for his kind words of welcome, and saying that we all feel assured that the citizens of Bloomington would do all in their power to make the meeting pleasant and profitable.

The President, who was about to proceed with his Annual Address, was here interrupted by Mr. Earle, who suggested that the read-

ing of the address be deferred until evening, and made a motion to that effect, saying there were not many members present this morning, and as undoubtedly many would arrive during the day who would be glad to hear the President's Address, he therefore thought it would be best to defer it for the present. Motion prevailed.

REPORT OF SECRETARY.

Len. Small was called for, and following is the financial report as read:

EXPENDITURES.

Freight and Expressage	$29.08
Wrapping Paper and Twine	1.95
Boxes to pack Books in	1.80
Postage on Books and Circulars	13.56
Letter Postage and Postal Cards	28.44
Stationery	6.90
R. R. Expenses while Traveling for Society	6.50
Telegraphing	1.70
Rent for Storage-room	8.00
	$97.93

RECEIPTS.

For Books sold	$ 1.00	
For Membership	3.00	
July 10th on Expense Account	20.75	
		$24.75
Balance due		$73.88

REPORT OF TREASURER.

was called for and read as follows:

RECEIPTS.

In Treasury at last Report	$ 583.95
Received for Memberships	96.00
Received State Warrant	2,000.00
	$2,679.95

PER CONTRA.

Paid on Warrants No. 88 to 120, inclusive, except No. 106, not yet paid	$1,849.76	
Postage and Exchange	1.56	
Commission (2% on $1,849.76)	37.00	
		$1,888.32
Balance in Treasury, December 17, 1883		$ 791.63

Respectfully submitted,

S. G. MINKLER, *Treas.*

The report of the Treasurer was received and referred to a special auditing committee, as provided by Sec. IV of By-Laws.

W. T. Nelson, H. K. Vickroy, and S. M. Slade were appointed such committee, whose report, afterwards made, was, that having examined the books and vouchers of the Treasurer, they found his report correct.

Announcement of Special Committees being next on the programme, President Galusha, in language eloquent and pathetic, recited the names of the eminent men, members of this Society who have died since our last Annual Meeting, naming first, Arthur Bryant, Sr., the veteran horticulturist of the West, and one of the founders of this Society. Dr. John A. Warder, the eminent pomologist of Ohio, who has worked with us and has advised us, has also passed away. Death, too, has claimed for his own that good old man, Prof. Tice, who has instructed us in meteorological science. Isaac Baldwin has also passed into that sleep that knows no waking. I think, gentlemen, that it would be most fitting to have a committee appointed to draft resolutions and take such other action as they see fit on the death of these old and esteemed members of our Society; what will you do in regard to the suggestion?

S. G. Minkler — It is with reverence that I mention the names of such men as Arthur Bryant, Dr. Warder, and Prof. Tice. We all knew and honored them as earnest, efficient workers in the great field of scientific investigation. I move you, sir, that the committee be appointed. The motion was unanimously concurred in, and Prof. J. B. Turner, Tyler McWhorter, and Parker Earle, were appointed.

The Secretary suggested that before adjourning the Society should fix upon some hour for its regular sessions to commence, and, upon motion of Mr. Nelson, the time agreed upon for the morning session to commence was 9 o'clock, A. M., 1:30 P. M. for the afternoon, and 7 P. M. for the evening session.

Adjourned to meet at 1:30 P. M.

FIRST DAY.—Afternoon.

At 2 o'clock, P. M., the President in the chair called for the report of the Ad-Interim Committee for Northern Illinois. O. W. Barnard, of Manteno, being present with his report, proceeded to read it:—

Mr. President and Members of the Illinois State Horticultural Society:

In reporting for Northern Illinois as member of the Ad-Interim Committee I will necessarily have to be brief, but at the same time will endeavor to be explicit.

To have gathered material for a full report from this part of the State upon all classes of fruits, would have been too heavy a tax upon my time and unprofitable to the Society, but having visited some representative localities, with a view to reporting on apple orchards, my observations will furnish a basis for the report for the district.

On September 5th, after a long day's ride on the rail, darkness found me at Princeton, the home of the Bryants. I was met at the depot by A. Bryant, Jr., whose kind hospitality I was glad to accept. Mr. Bryant, like his father, is a nurseryman, and having grown up in the business feels perfectly at home in his calling. His neat and well-kept grounds, and stock of trees and plants, demonstrates what the most careful and intelligent treatment is capable of producing. I have never seen a nursery and grounds kept in more complete order. His nursery, located on the prairie, is laid out in blocks, or squares, containing two and a half acres each, swarded drives around each block, and all thoroughly underdrained, and the entire absence of weeds evinces the most thorough culture. Mr. Bryant and his amiable wife laid me under lasting obligations for the many kindly courtesies shown me the short time I was a guest in their model rural home, and in showing me through the splendid grounds, stately groves and extensive orchards of their distinguished relative at Princeton.

I cannot refrain from saying that the Bryants have done a great work for horticulture in this part of the State.

While here I had the pleasure of calling upon John H. Bryant, the younger and only surviving brother of the original Bryant family. His beautiful and elegant mansion stands a little south of Princeton, amidst a group of spreading maples, stately cedars, and magnificent elms, planted with his own hands forty years ago. Mr. Bryant, like his brother Arthur, is a horticulturist, and has planted and matured many fruit trees on his extensive grounds, and has unselfishly converted his groveland adjoining his residence, at his own expense, into a public park, which has become a famous resort for pleasure seekers during the summer months.

While here I was treated to a dish of luscious pears, grown upon his grounds, and presented with a volume of his poems, for he, like his brother Wm. C., is also a poet of no mean order.

I also had the pleasure of inspecting the orchards and grounds of the senior A. Bryant, whose decease occurred a few months ago. He was one of the earliest settlers of the county, and during his residence here set three orchards of apple trees, the first one forty-eight years ago, some of the trees of which are still standing, but in a dying condition; his next one was set on prairie soil, and the other on "clay barrens," neither of which can be said to be in a flourishing condition, but the last one named was bearing considerable fruit, of which Ben Davis and Mother seemed to take the lead. The old homestead stands amid towering magnolias, persimmons, pines, spruce and cedars, and is skirted on the north-west by a splendid black-walnut grove.

On the morning of the 6th, in company with Mr. Bryant, I visited an apple orchard of one thousand trees on the Mosely estate, a few miles south of Princeton. The trees had been grown and selected by the senior Mr. Bryant, and the orchard set under his supervision, as a commercial orchard, but it had gone into decline, though some of the trees were apparently healthy, but many were dead and dying, and none of them bearing much fruit. The Ben Davis, Willow Twig, Snow and Domine, seemed to be suffering the least. The orchard is eighteen years old.

We then called at the residence of W. C. Trimble, who has eight acres of Synder blackberries, planted on prairie soil, and which were apparently healthy and vigorous and bearing well. Mr. Trimble being absent we did not learn many particulars.

We next called on J. G. Bubach, whom we found applying a top dressing to his favorite seedling strawberries, of which he has five hundred and from which we may hear something in the future. Mr. Bubach has also five acres of strawberries under cultivation, but from which he harvested only one-fourth of a crop this year—too much frost in the early spring. He also grows grapes quite extensively; showed us some fine specimens of the Worden which he thinks is going to be a profitable variety to raise. He is a veteran nurseryman and fruit grower, and an admirer of Wm. C. Bryant's poems, and while we rested 'neath the shade recited "Thanatopsis" and "Death of the Flowers," without a mistake.

On the 7th, in company with Mr. Bryant, went to Kewanee, in Henry County; called upon M. G. Quinn, who resides in town, but who kindly took us in his carriage to his farm two miles in the country. Mr. Quinn is a beginner in farming and fruit raising, but has been quite successful in rejuvenating an old orchard. This orchard originally comprised about forty acres, but nine-tenths of the trees were dead when he bought it. He cut the dead ones down, broke up the land and raised a good crop of corn, gave the surviving trees a

good "currying," which removed all the old dead bark, and the consequence was a beautiful crop of fruit.

We next visited the orchard of E. M. Vail, half a mile west of Kewanee, situated on very high clay bluffs, many of the trees standing on a steep hill-side, and no orchard could have better drainage. In the young orchard the trees are planted close, with rows of raspberries and blackberries between, and had the appearance of good cultivation. Ben Davis and Willow Twig predominating, not bearing much, and many are sickly and dying.

On the 8th we called upon Charles Kent, who lives half a mile north-east of Kewanee, who took us in his carriage to see his orchards, located on farms he has recently bought. Mr. Kent is not a practical horticulturist, but is a successful farmer, and his orchards presented a reasonably healthy appearance, situated on high rolling prairie. He reports that a few years ago they were productive, but the last few years have borne but little fruit. If high rolling land, with deep ravines, in fact the top of the watershed between the lakes and the "Father of Waters," is best adapted to the growth of the apple, this, Henry County ought to succeed, for it is so situated.

September 10th we called on John Kittemars, an old resident of Bureau County, whose orchard is located on high clay barrens, and appears reasonably healthy—Ben Davis and Jonathan quite prolific.

We next proceeded to the large orchard of five thousand trees, planted by J. G. Calef for commercial purposes, situated on high prairie bluffs on the right bank of Bureau Creek, a little west of Tiskilwa, under lease at present to S. G. Sonerhill, the most productive orchard we have yet found in our peregrinations.

In this orchard are two thousand Ben Davis, seven or eight years old, bearing all the fruit they ought to at that age. The plat of ground is quite level, with a small basin or depression near the middle. In this basin the trees have all died, Mr. Sonerhill thinks from being filled with water a year ago last winter. The older trees were not bearing much, except the Maiden's Blush and Dyer, which were well laden with fine fruit. There is no tile drainage here, but the bluffs are perhaps one hundred feet above the bed of the stream. We then called on the Hon. L. D. Whiting, who resides a mile or two west of the orchard last named, who kindly showed us through his grounds. His orchard, he claims, is located on a peculiar drift formation, and is underdrained with a gravel bed. His trees look quite healthy, and are bearing well for their age, being over twenty years old. Those doing the best are the Red Astrachan, Ben Davis and Wagoner, in the order named, yet several of his trees "have gone where the woodbine twineth." From here we drove to Tiskilwa, and after dining, separated, returning to our respective homes. Subsequently I called upon H. Mortimer, who resides near Manteno, in Kankakee County, whose orchard has been considered one of the most productive in the county, who reports that the Snow has done

well with him this year, but the King of Tomkins County and Cooper, with other varieties are dead and dying. In my own orchard the Keswick Codlin, Snow, New York Vandevere, Jonathan, Winesap, Domine, and Golden Russett, have been reasonably productive the present season, especially the Keswick Codlin and Winesap, but the Domine is sickly and dying, Rambo and Maiden's Blush about all dead. The Lowell seems healthy, but did not bear this year. The Pomme Gris bore a fair crop, the Bellflower a very light one. I sometimes replace the dead trees with vigorous growers, and my method has been successful as far as I have tried it. It is this: Dig out the old stump the fall before I expect to plant the young tree, leaving a deep, wide hole open during the winter. In the spring, before planting, fill it with straw and burn it, then use rich surface soil to fill up with, and plant Duchess of Oldenburg, Bellflower, or Golden Russett, giving them no cultivation, but thoroughly mulching for two years, and have never met with a failure yet. On the grounds of M. Barnard, which are adjoining my own, the varieties giving the best results this season are the Snow, Roman Stem and Golden Russett, in the order named. In the east part of this district the Snow, this year, has been especially productive and vigorous, retaining its leaves till very late in autumn. William Cooper, residing near Kankakee, has had success with none but the Duchess of Oldenburg and the Snow, which yielded a good crop. He has two large orchards situated on high, rolling prairie, without tile drainage, the younger of which is dying badly; Ben Davis nearly all dead. What I have said of these orchards will apply to his brother Wesley's, adjoining, and in fact to all in the neighborhood and county, with few exceptions.

On the 25th of September, I called on P. A. Bonvallet, the proprietor of the Golden Cresent Vineyard, near Bell Park, in Kankakee County, who has inaugurated a new departure in grape culture. Having located on a high hill, he conceived the idea that such land *must* be good for *something*, and being an emigrant from grape-growing France, decided to try grapes, and has been abundantly successful. He has twenty-five acres planted to this fruit—three or four hundred to the acre, prunes very little, trains them on a single wire, gives them no protection, and no cultivation; in fact there is not a foot of fence about his premises. He wants no obstruction to the free circulation of air among his vines, not even a large post. His vines don't grow very large, but are smooth and healthy in appearance, while the fruit is large and fair, and of an excellent quality. For market he grows Concord and Delaware, principally the former, and sells in Chicago, his receipts for which this year are six or eight hundred dollars. For wine he grows the Oporto and Martha, and some other foreign varieties. The land is a clean, fine yellow sand, and in a state of nature supported a scattering growth of scrubby oak saplings.

It will be observed that the outlook for long-lived and fruitful apple trees in Northern Illinois is not at present very flattering. With the single exception of the Duchess of Oldenburg, there seems to be none that are hardy and productive under all the conditions of our latitude. It is true that some varieties do well in certain localities for a few years, when premature decay is sure to overtake them. And whether the cause of this universal decline can be attributed to unfavorable electrical conditions, to extremes of temperature, to extremes of moisture and drouth, or to want of inherent vigor in the varieties at present propagated, or simply to a want of adaptation to the rigors of our climate, are questions that none of the experts in pomological science can at present agree upon. It would seem that conditions are slightly more favorable on high clay bluffs for growing apples, even without timber belts for protection, than on ordinary upland, unless well underdrained, but the difference is hardly perceptible. In view of the fact that the apple is the most valuable fruit of the north temperate zone, I have thought this Society might do well, in order to stimulate investigation, to offer prizes for the best treatise, or essay, on the cause and cure of the decline of the apple-tree in the Northwest. I am fully satisfied that a careful, intelligent, scientific investigation, and experiment, would lead to results of vast importance to horticulture: but whether the coming apple is to be an importation from Eastern Russia, Northern Germany, or is to be developed from seedlings, or crosses from some of our native or present varieties, is a problem the future alone can solve: but it is coming, and he that is instrumental in bringing it forth will the divine Pomona gladly conduct to the "Elysian Fields," when the angel of death shall have closed his mortal career, and his very name become a benediction to posterity.

Respectfully submitted.

O. W. BARNARD,
Member of the Ad-Interim Committee.

The other member of this committee, Arthur Bryant, Jr., not being present, the Secretary announced that he had received, since the opening of the session, a letter from Mr. Bryant enclosing his report, which could be read if so desired, but Mr. Bryant would be here soon, probably before 4 o'clock. The reading of the report was deferred until Mr. Bryant should arrive.

FARMER'S HORTICULTURE.

Report upon was called for by the President, but the gentlemen composing this committee, Hon. Wm. S. Hawker, Kankakee, and H. M. Dunlap, Savoy, were absent, and no report had been received.

ORCHARD CULTURE.

Report of this committee was next in order.

President — Is Mr. Johnson, of Warsaw, present?

A. C. Hammond — Mr. Johnson expected to be with us, but is kept at home by ill-health. He will send in a report for publication.

Mr. W. T. Nelson, of Wilmington, being then called upon, responded:

Mr. President:

It appears from the programme of this meeting that I have been appointed to prepare a paper on Orchard Culture. I had forgotten that I had been appointed until I received from our Secretary, on the 12th, the published programme.

I shall briefly give you a few thoughts on the subject, with reference to the culture of the apple. Shall differ, perhaps, from many, hoping thereby to bring out the views of others who are more competent to discuss the subject. Almost any orchardist has his own particular views as to the location of the orchard, soil and the preparation, when and how to plant, varieties, cultivation, etc. The site for an orchard should be upon high dry land, sloping toward any point of the compass except south. I prefer east. If such a location cannot be had, and the land is level, it should be thoroughly tile drained. Would select the poorest soil I could find in our prairie country. Why I said poor soil, I believe our prairie soil, as a general thing, is too rich, and produces too strong a growth, consequently our trees are injured during the severe winters, and in a few years, generally before the tree gets to be old enough to vote, it is either dead or dying.

Preparation of the Ground. — Should be plowed say eight or ten inches deep by back-furrowing, leaving deep dead furrows between the rows of trees, and if the planting is to done in the spring the plowing should be done the previous fall. I prefer spring planting in the North. The trees should not be planted more than two inches deeper than they stand in the nursery. I believe more trees are lost by too deep than shallow planting. They should be well mulched with old straw or hay as soon as planted, to prevent injury from summer drouths.

Distance Apart. — Many opinions are entertained by planters say from sixteen to forty feet. Close planting, from sixteen to twenty feet, I think produces the best results. Owing to the short life of our orchards, by the time the tops interfere with each other, and they become too thick, they have ceased to be profitable, and are

either dead or dying. In the locality where I reside (Will County) we must plant a new orchard every fifteen to twenty years if we want fruit. Most all varieties (except a few) commence bearing in about six or eight years after planting, and continue about seven or eight years, which is about as long as they are profitable. A few varieties, perhaps, hold out a little longer. Many years ago my theory was to plant close, say twelve to sixteen feet apart, and when they became too thick to produce fruit, cut out every other tree. I find in my small orchard so planted eighteen or twenty years ago, that when they were ready to cut out a large portion of them were ready for the woodpile and brush heap, dead and dying.

Selection of Trees.—The trees should be not more than two to three years old, taken up with plenty of roots, stocky, and tops well formed. In regard to high or low tops there are many opinions. The tops should be formed high or low according to the variety. Winesap, Yellow Bellflower and many sorts that have large, spreading tops should have their top formed higher than those that naturally form their tops more upright. As a general rule would say form tops from three to four or four and a half feet.

What Varieties to Plant.—We have but few varieties that are adapted to all sections of our State. My advice to those who are going to plant, is,—examine the orchards in your locality and ascertain what varieties do best, then go to your nearest nurseryman and get your trees. The late Dr. Kennicott used to tell us, in speaking of varieties, that what was a truth in New York would be a lie in Illinois.

Cultivation.—The first year plant your orchard to sweet corn. It is as good as anything, perhaps the best. It affords shade and protects the trees from the hot sun during the summer, which frequently injures them. After that, plant some hoed crops, keeping the ground in good condition and free from weeds by shallow cultivation. About the fifth year from planting sow to red clover, each year mowing the clover and letting it lay on the ground for mulch. Never seed your orchard to timothy or sow small grain. My orchards so treated have done the best.

Pruning.—Most everybody has a particular time to prune. I do but little trimming in my orchard after two or three years from planting. While the trees are young and branches small form the top according to the variety and there will be but little necessity of much trimming afterwards, except to take out limbs that are crossing each other and removing the dead ones, if any. All branches removed that are an inch or more in diameter, should be painted over to prevent rotting and injury. Limbs should be cut off close to the collar, and be made perfectly smooth. As to the time of trimming, my practice has been to trim any time when needed, except when the wood is frozen, and on any day except Sunday.

I have been experimenting a little upon the old theory (lately revived) of cutting out a ring of bark from a quarter to an inch wide. Have succeeded in getting some fruit, but injuring, in many instances, the trees badly. Have been equally successful in causing the tree to bear by severely barking them with the whippletree when plowing; also see trees brought into bearing by the work of the borer. Whatever tends to weaken the vitality of the tree or endanger its life will cause it to put forth all its energy to produce fruit, but in time, if persevered in, will cause death.

Fifty years ago. — I remember when a boy that old veteran horticulturist (now deceased), Reuben Ragan, of Indiana, was visiting my father and said: If you would strip the bark off the trunk of a tree the longest day in June, that it would fruit the following year. My father thought it would surely kill the tree. I thought I would try the experiment, and when the time came (in my father's absence) I selected a fine tree in the orchard, had got one side peeled, saw my father coming, and quit. He, seeing what I had done, gave me a thrashing. The next year the tree bore a fair crop of fruit, lived afterwards three or four years, and died.

I am aware there are many advocates of this barking operation to produce fruit, but I think the time is near at hand when but few orchardists will practice it.

There are many other subjects connected with orchard culture which I have passed over, knowing that they will be ably discussed by my friend Johnson, of Warsaw, who has had a large experience in orcharding, and who I see is on the programme for a paper.

President Galusha — It has been customary to have informal discussions on the papers read. The subject of Orchard Culture is now before you.

Dr. Schroeder — Will it pay to plant an orchard every few years for the sake of raising a few apples? Will not the raising of hay and making butter pay much better?

W. T. Nelson — Our orchards are certainly short-lived. Land must be well drained.

Dr. Schroeder — Will it pay to tile-drain for an orchard, or will the roots of the trees, as it is generally believed they will, clog the drains in a short time?

J. M. Robison — I tile-drained in my orchard twenty years ago, and have never found any trouble of this kind. Willow and cottonwood roots will enter the tile. Apple tree roots will not.

J. B. Spaulding — I have tile-drained extensively, both for orchard and nursery; laid tile three and four feet deep and thirty feet apart. I do not believe in manuring young trees. Too rapid growth is not wanted. In the State of New York apple trees do not grow more in two years than they do in one in our orchards, and they raise more fruit than we do. The most rapid growing trees are the tenderest. I do not force the growth of orchard trees, and am satisfied that nurserymen have stimulated with manure their young stock too much.

Milo Barnard — I have experimented in peeling. Some years ago I peeled a number of trees at different seasons. Those peeled on the 15th of September never recovered, while all the others which were operated upon earlier in the season, have a new healthy bark, and have been more productive than those not peeled.

W. T. Nelson — Won't this kill your trees in a few years?

Mr. Barnard — The bark was stripped from the trunk of the tree, extending from the roots to the limbs, and, in fact, some of the larger limbs were completely barked. Those peeled in June gave the best results. All are now apparently as healthy as any in the orchard.

W. T. Nelson — Several years ago one of my neighbors peeled a number of trees and they are now dead. Our orchard trees have no surplus strength, and nothing should be done to further weaken them.

T. McWhorter — I believe this stripping of the tree is a humbug. Anything that will weaken the vitality of a tree will make it bear fruit, but shorten its longevity, and the trouble of the orchards of this country to-day is, that that they are already too short-lived. Root-pruning is better, will accomplish the same results and not injure the tree so much.

Dr. Schrœder — Is not our root-grafting the fault? Would not top-grafted or budded trees be better and live longer?

O. W. Barnard — In reply to Mr. McWhorter, would it not be better to bark a tree and get a little fruit than none at all. Many of our trees have perished before giving us any fruit.

Henry Mortimer — It is true of most varieties, trees must be planted every few years. But Duchess, Snow, and a few other varieties, have in my orchard produced good fruit for twenty years; however, even of these, young trees give the best fruit. We have, I think, too much vegetable matter in our prairie soil, causing our trees to make a too vigorous growth. I have practiced ringing to some extent, but do not look upon it with favor, except, it might be, in a new country, where it is desirable to get fruit early. I think we practice planting too close; would advise planting thirty-five to forty feet apart.

Mr. Martin — I have two varieties of apple trees, one of them the Duchess, that were planted in 1859, and they are good and healthy yet. I would not recommend the barking of trees.

S. G. Minkler — I had the barking fever years ago, but have fully recovered. Last winter has so affected the orchards that many of the trees will not need barking or anything else. In fact, if injuring a tree will make it bear, we ought to have a wonderful crop next year, as we find very few trees that have not been more or less injured by climatic influences during the last two years. In reply to Dr. Schroeder, I will say, I have had large experience in top-grafting and budding trees, and such trees are no longer-lived than root-grafted trees.

W. T. Nelson — No trees are hardy in my nursery except Duchess; all others are more or less injured. I think we will find plenty of firewood in our orchards next year.

President Galusha — I have a letter from a friend in Iowa, saying that two hundred cords of dead wood had been cut from his orchards this year.

J. M. Robison — The disbarking which has been described is rather severe. In the orchard of Mr. Spaulding, near Springfield, which has been often quoted as proof of the good effects of disbarking, the mode followed is quite different. He removes a ring of bark about half an inch in width, which very soon grows over. This ringing has been repeated on some trees three times without injury. His trees are young and vigorous, and the plan has doubtless been a success in this particular instance. Trees were planted sixteen feet apart in this orchard, with the expectation of losing some in experi-

menting. Sixteen feet is much too close; the trees are forced up too tall, and cannot bear so well. The Willow Twig wants light and air all around it to produce fine fruit. Ben Davis and Winesap should be fifteen or twenty feet across in ten years. Thirty-five feet apart is near enough to plant. Whether the injured trees which are to be found in all our orchards will recover or not depends on the severity of the present winter. If it proves mild they may come through all right; but if very cold, it will kill the new wood layed over that killed last winter, and the tree perish. Under favorable circumstances a healthy growth of tree will cover up dead wood. The peach tree is sometimes killed to the bark, and grows and does well afterward. As to Dr. Schroeder's question, I think the mode of grafting or budding has no effect on the fruitfulness or longevity of a tree.

S. G. Minkler — I think we, as a Society, will have to condemn close planting. When too closely planted the roots meet, interfere with and rob each other, and for lack of subsistence the trees fail, and the fruit soon becomes of poor quality.

A. C. Hammond — Is the theory of Mr. Nelson, that the highest and driest locations are the best orchard sites, correct? As a Society we have always advocated and practiced it, but the experience and observation of this season has shaken my faith in it. In Hancock County the large commercial orchards are about equally divided between dry-rolling and flat, moist land. Those on the flat land passed through last winter with the greatest safety, and have the past season produced more and finer fruit than the others.

T. McWhorter — I am glad to hear these remarks. Trees do not attain the size and longevity when grown on the bluffs or high grounds, where we thought they would do much the best, as when grown on the low lands.

H. K. Vickroy — My observations corroborate these speakers. Apple-trees do best on low lands.

J. M. Robison — I am also glad to have these facts come out. My orchard is on both kinds of land. I have trees twenty-five years old that are still productive on the low lands, while those on ground twelve feet higher are not so healthy or productive. On two acres of land on which water stands nearly a month every spring, to

within a foot of the surface. I gathered from two hundred Winesap trees two thousand bushels of apples.

Dr. Schroeder — I had an orchard of Janet on high land that yielded better than that, but Willow Twig wants low land.

W. T. Nelson — When I spoke of dry land I did not mean broken bluff land, but that which is moderately well-drained.

President Galusha — We shall be very glad to hear from Prof. Budd on this very important question.

Prof. Budd — I would much prefer listening to talking. I came down here thinking to advise the good people of Illinois to plant some of those varieties of fruits that grow on the opposite side of the mountain ranges of Europe; but did not know before hearing your discussions here this afternoon how much you need these fruits. Our orchards of Iowa were not partially, but wholly killed, by the cold of last winter; in fact, literally cleaned out. When the winter of '70 and '71 killed six hundred Ben Davis trees on the College Grounds I came to the conclusion that we must have something hardier for Iowa, and I now think you need something hardier in Illinois. As to the question now under consideration, it strikes me that it is one rather of soil, or mechanical condition of soil, than one of elevation.

S. M. Slade — We hardly ever take up the apple without getting things badly mixed. There seems to be a variety of opinions on this question of orchard sites. I know but one orchard in the vicinity of Elgin that pays as a commercial orchard. It was planted forty or fifty years ago on what is called oak openings, the land sloping to the north and west. The trees now look thrifty and healthy, and have borne great quantities of fruit. I agree, however, with what has been said, that fruit can be properly grown, as a rule, only on young trees.

Question — Describe the soil this orchard is on?

S. M. Slade — Clay loam, gravelly subsoil, situated on the bank of Fox River. Land undulating; the ravines rather deep. I have tried girdling by running a saw around the tree several times. The first time I did not lose a single tree; another time a dozen died. The Willow Twig was the only variety that seemed to be benefitted by the operation in the least.

Dr. Sanborn — In these talks about apple trees we have not been told how the trees were trained. I would like to inquire whether the orchards which have been so seriously injured or killed by cold were pruned high. I have been strongly impressed with the fact, that increased longevity is given to pear trees, when blighting, by cutting them low and allowing several stems to grow from the ground. Would not this plan of growing several stems from or near the ground be worth a trial in the apple orchard?

President Galusha — I am glad that this question has come up, and that we have a progressive horticultural editor among us. I have observed that the healthiest trees are those having low heads. Let us examine this thing.

Prof. Budd — We want facts just as they are. Theories and teachings of the past are nothing if facts are opposed to them. The danger of injury to the trunk of the tree might be lessened somewhat by adopting the plan practiced in some parts of Europe, of setting trees at an agle of forty-five degrees, pointing south. One thing I want to call your attention to: the condition of orchard trees when they went into winter quarters a year ago last fall. Those who picked apples that fall found no difficulty in getting them all, the leaves were so few. Gleaners found no apples where they had the year before picked one hundred bushels. We could find no perfect leaves on Ben Davis, and the leaves of most other varieties were nearly as bad. The fact is, most of our apples and cherries are from the soft, humid climate of Southern Europe, and are wholly unsuited to our climate. As I said before, what we want is varieties suited to our variable climate, and dry, arid autumns; and we can get them, I think, if we go to the right place in Europe for them.

Parker Earle — This question is certainly a most important one. I have been greatly surprised at the statements made here: so many of our members expressing themselves to the effect that orchards planted on low grounds were the most productive. This is reversing the old theories and past teachings of the Society, and as future orchard planters will look to us for reliable information, I hope the question will be very fully discussed, not only as to apple orchards, but in relation to orchards of peach and pears as well. My opinion is, that the high grounds have decidedly the advantage as regards the attacks of insects, diseases, fungi, etc. Our highest lands have been considered worth many times as much as the low lands for fruits.

E. A. Reihl — I think, generally, the high grounds are best. I am on the Mississippi River, where the water has more influence on the low lands than on the high; but in more Southern Illinois, where the valleys are deep, they would be more subject to frost and therefore not so good.

Prof. Burrill — I have always supposed that our high lands were the best for orchards; but for the last three years the orchards on the flat lands have done better than those on the ridges. I know one, planted twenty years ago, that has been giving immense crops of apples — soil common black prairie land — very rich soil. Now, on some of the high ridges the apple orchards have been doing exceedingly poor. The subject seems to me to be a very complicated one; not one simply of low ground or high ground. Modifications of soil and subsoil, and so many other conditions must be considered that I am not ready to decide.

H. M. Dunlap — I cannot add much to what has already been said, but think we, as a society, should insist that low or wet lands be well drained. I consider most any land suitable for an orchard that will produce a good crop of corn, and does not remain saturated with water long. I have prepared to plant a commercial orchard of twenty-five acres in the spring, and have considered thorough drainage of much more importance than elevation.

J. M. Robison — The terms high and low are only comparative with us, not so much difference as with you, Mr. Earle. The low lands are the best drained, because the soil is more porous, made up largely of the soil washed from higher ground.

A. C. Hammond — We do not always say just what we mean when we speak of low land. Our flat prairie land is generally on a divide between two streams. This is the land that has been referred to in this discussion.

President Galusha — Gentlemen, Dr. Schrœder is down on the programme for an essay on Experience in Silk Culture. What is your pleasure; will you go on with the discussion, or hear the Doctor's paper?

The general expression was in favor of having the essay, and Dr. Schrœder was called forward, and read:

SILK CULTURE.

Mr. President and Members of the Society:

This is really a new topic for me to handle, although I have advocated it both publicly and privately for many years as a coming American industry. It is also a new branch of our Society, and it naturally should be a branch for horticulture.

My hopes are that the horticulturists all over the United States will take hold of this very important matter, and with the help of the *good* press, the help of public lecturers, the help of true statesmen, and the help of legislatures, in assisting in an enterprise worth *millions and millions* of dollars, besides the moral effect, in giving our young and and old people, even our cripples, an easy and profitable employment. With the help of our State Industrial and Agricultural Colleges and State Societies, and last, but not least, with the help of our true and patriotic women, we *will* and *must* succeed.

It would be against all history of our lightning-pushing and advanced American people, not to succeed in an undertaking where there is not only pleasure and patriotism, but "millions in it." There can, and should, be no such word for us as *fail;* but, before we come to the practical work, the statistics, the "millions in it," let us have a brief note of the history of silk culture.

Grape culture, and I may say, fruit culture, if we count Ohio and the never-forgotten Nick Longworth out, is a Bloomington child, now thirty years old; and if my life is spared, with the help of this and other mentioned societies, I will devote my coming days to the enterprise of silk culture. Let me be plain just here, and give the highest praise to our Mennonite leaders who carried silk culture into Kansas and Nebraska years ago; to the noble French Count who started the wonderful Socialistic Colony of Silkville, in Kansas, with barrels full of French gold, and with the help of one of France's best and most intelligent silk scientists; Prof. L. S. Crozier and Mr. Abraham Thiessen, of Fairbarry, Nebraska; and to a few other patriotic foreign men and American women.

Silk culture, according to history, is old, very old, and began four thousand years before Christ, in China; but, according to the unschooled age, we find silk culture mentioned in Chinese history 2,602 years before Christ. A daughter of the Chinese Emperor commenced silk culture in the Province of Kotham, 140 years before Christ, and another daughter brought silk culture to Tibet.

Aristotle, the Greek, speaks of silk culture; and Alexander brought the same, during his wars, to Greece.

Silk became a great luxury in Rome, and laws were even made against the wearing of silk dresses by the poorer classes. The Thibetans brought silk culture to Italy, and in 220 we find looms to weave the raw silk in Italy. In 555, Persian monks brought silkworm eggs and mulberry seeds from Serinda to Constantinople. From

this time on silk culture became famous in Greece and neighboring countries. Venice ruled the silk trade from India, Phœnicia, and Persia. The Arabs brought silk culture to Spain during the eighth century. In 1130 it was introduced into Sicily, Florence, Bologne, and Milan. In the fifteenth and sixteenth century Venice ruled the silk trade.

The first mulberry-trees were planted in France, in 1268, A.D., and in 1345 we find silk manufactories in Marseilles and Montpellier; and through the aid of Louis XI silk culture became an established fact. In 1667 France ruled in silk industries. Through the fearful night of Bartholomew and the flight of the Huguenots silk culture spread all over the European continent. By digging deeper in history we may find that even one or more of these heroes gave the very first impulse to silk culture in America.

Silk culture seems to have been first introduced into Germany about the tenth century. In 1580, Breslau had over forty manufactories for raw silk. Frederick the Great became the leader of silk culture, and had it taught in the public schools. Every schoolhouse had a mulberry orchard. I remember when a boy that our teachers taught us silk culture. But the seven-year war, the Napoleonic war, destroyed this great industry in Germany.

In 1874, according to statistics:

China produced	.....	7,360,000 lbs.	raw silk.
Italy "	.....	5,720,000 "	"
France "	.....	1,462,000 "	"
Japan "	.....	1,100,000 "	"
Calcutta "	.....	850,000 "	"
Persia and neighboring States produced		800,000 "	"
European Turkey produced	.....	738,000 "	"
Spain "	.....	280,000 "	"
Asiatic Turkey "	.....	340 000 "	"
Greece "	.....	26,000 "	"
In all	.....	18,678,000 lbs.	raw silk.

Now we come to the United States. Before my time here, an attempt was made to introduce silk culture. If we had had proper teachers, if the inflow of gold from California, the opening of the Western Territories, now States, had not aroused our people to such profitable results, silk culture would have been a fact here. So it went to sleep like Rip Van Winkle, and awoke again through the emigration of the hunted Mennonites, and the many noble Quaker women of Philadelphia, the founders of Silkville, and the talents of men like Prof. Crozier, Thiessen and others. We find that attempts have been made all over the country, even at Normal, by noble women to grow silk.

I prophecy that in the future America will be the leading silk-producing country. So far, we have had to rely mostly upon the osage orange leaves as food for the silk-worm; a very inferior food and very troublesome to gather. And now comes in the help and

duty of horticulture as a branch of silk culture. The best and only safe food is the *mulberry-tree leaves.* Without the mulberry no silk culture.

A company called the New York Silk Exchange, located at 27 Broad Street, New York City, have established a paper, under the editorship of Miss L. Capsadell, called the "Silk and Fruit Culturist." It is a good monthly paper, at the low price of one dollar a year, and has a circulation reaching all over the United States. This company have purchased a large tract of land, near New York City, in New Jersey, and have laid it out into three and five acre lots, planted with the best varieties of mulberry and other fruit trees, and small fruits, and have put up houses. They sell the premises on easy terms. They have erected a large school to teach practical silk culture. They also buy cocoons, furnish silk-worm eggs, utensils and the trees necessary.

Another establishment of the kind is started by Prof. L. S. Crozier, in Corinth, Mississippi. He is one of the best writers and instructors on silk culture, sells trees and eggs, and buys cocoons, from which he reels the silk.

And I, your humble servant, try to do the same on a small scale here.

America has a favorable climate and good lands for the mulberry tree, and the never-resting nurseryman, to propagate, improve, and sell the trees. In New Jersey and Pennsylvania there are silk schools for boys, with practical teachers who spend their time in raising silk and in becoming good and rich citizens. This industry will prove a great blessing to our people, by giving our young men and women a practical and remunerative employment, better than that of piano thrashers, clerks, bookkeepers, stage-struck actresses, songsters and clog-dancers. Our peculiar institutions and habits exclude millions of young men and women from profitable, honorable business. No wonder that our streets are lined with them. No wonder that drunkenness prevails, and the penitentiaries and lunatic asylums are filled to the top. Who is to blame for this? I often pity these young people cursed by everyone who does not make the matter a study. Give them good advice and set the example for them; give them work, and the evil will cease. "*Idleness* is the root of all evil."

I will give a very brief description of the practical work of silk culture. The first necessity is to have mulberry trees planted to get food for the silk worms. Before you can get sufficient mulberry leaves, you may rely upon osage orange, or hedge plant leaves; this, however, produces an inferior silk, which is consequently cheaper in the market. The leaves of the Japonica mulberry tree produce the very finest silk, which demands the highest market price. The next best variety is the Moras Rosea; next to that is the Moras Moretti, a black variety of fruit; and next the Moras Alba, or white mulberry.

The Mennonites brought with them, and imported the Caucasias or Russian mulberry trees and seeds. Prof. Thiessen says it is a seedling of the Moretti. The Mennonites surrounded their farms with this kind of mulberry tree hedge for the purpose of getting their fire-wood and posts on their prairie farms; and many of them used the fruit, that was left by the birds, for preserves.

In Kansas the Mennonites have planted hundreds of miles of mulberry hedges, and use their leaves to feed the silk worms; but I doubt if this is advisable, for experience and the science of horticulture have taught me that all good fruits and plants need culture or they will go back into a wild state. I do not advise beginners to use hedge leaves for food for silk worms, but do advise them to plant the Moras Moretti, Rosea, and Alba in districts where they cannot grow the *boss* tree, Japonica.

Each female silk-worm moth will lay about three hundred eggs and then die. The eggs will be gathered and preserved in a cool place to be used when the mulberry tree is in leaf. A good, airy room, with a door and two windows well cleaned, and racks put up, with lattice work, will do to raise the silk-worms in. The eggs will be spread on a sheet of paper covering the whole shelf; in eighty-five degrees (summer heat) they will begin to hatch. Now take a mosquito net, spread that over the eggs, and take fine chopped mulberry leaves and spread them on top of the net. The first batch of worms will crawl through the net to eat the leaves. Then take the net with the worms and place them on the upper shelf, which you will have covered with paper. The next day another batch of worms will crawl out of the eggs, and you will place them upon the second shelf, and so on for five days, when it is supposed they are all hatched. You will feed them with fresh leaves, three times a day, make a chalk, or pencil mark for every meal you give them, on each shelf.

The silk worm will change its skin four times, and has five eating periods. After eating five days it will change its coat; then it will eat again four days and change its coat one day; eat again four and one-half days, change his coat one day; then eat six and one-half days, change its coat one and one-half days, and eat again eight and one-half days. From the time the worm leaves the egg it will take only thirty or thirty-five days for it to get its growth; it will then crawl up the ladders or in branches fixed for it on the sides of the shelves, and begin to spin its cocoon from one fine thread twelve hundred to two thousand feet long. Eight days after this we find the worm in the cocoon, changed into a butterfly (commonly called), and eight days later it will eat a hole in the end of the cocoon and escape to lay eggs as said before.

It would take too much time for me to give a long explanation of this industry, and I refer you to the little work on silk culture by Miss L. Capsadell, and the writings of Prof. Crozier.

Respectfully submitted

DR. H. SCHROEDER.

The Doctor illustrated his treatment of the Silk Worm in its different stages of development by exhibiting machinery of his own invention. He also showed samples of raw silk, and with characteristic generosity distributed a large number of cocoons among the ladies in the audience.

J. M. Pearson — Mr. President, I would like to have something done towards procuring a room to hold our meetings in where we will not freeze to death. It is impossible to continue our sessions here. I move that the Executive Committee be instructed to secure a suitable place to meet — more comfortable and better lighted.

Parker Earle — I second the motion, and will state for the information of the gentlemen that other quarters have already been secured: — Durley Hall for this evening, and the basement of the Free Congregational Church for to-morrow and next day.

Motion put to vote and carried.

At the suggestion of Mr. Minkler, Prof. Budd, of Iowa, and Prof. Ragan, of Indiana, were invited forward and introduced to the society.

Society then adjourned to meet in Durley Hall at 7 P. M.

FIRST DAY—Evening Session.

Assembled in Durley Hall, Vice President Barnard in the chair, who announced that the Society would now have the pleasure of listening to the address of President O. B. Galusha, which had been postponed from the morning session:

Gentlemen and Ladies of the Illinois State Horticultural Society:

We meet for our annual reunion under circumstances somewhat calculated to sadden our hearts and cloud our prospects.

Some of our comrades, veterans in horticulture and science, have been called from our circle since our last meeting, never more to join us in these gatherings. The great services which these dear departed friends have rendered to the State, the Great West, and to this Soci-

ety in particular, I will not recount. This duty will be discharged by others who have long known the personal worth and the efficient work of these good men.

Our great loss in their deaths has seriously impressed me, as it undoubtedly has all of you, with the fact that it imposes upon us who remain increased responsibilities in the prosecution of our chosen art. This consideration has, in part, influenced me in the selection of a topic upon which to address you to-day:

THE PROBABLE FUTURE OF ILLINOIS HORTICULTURE.

"Watchmen, what of the Night?" Horticulturists of Illinois, what is the present status of horticulture, and what are its prospects for the immediate or more remote future? We are here to-day to examine and, if possible, give approximately correct answers to these questions.

Horticultural Societies are organized and conducted, not only to study present modes and results, but to forecast the future and achieve success; and the greater and more numerous the obstacles the greater must be the intellectual effort and the physical energy pressed into service in achieving success. In perhaps no State in the Union, south of the great chain of lakes and east of the Rocky Mountains, are the obstacles to successful horticulture greater or more numerous than in the State represented by this Society.

At our last annual meeting I enumerated some of the achievements of the Society during its life of a quarter of a century; and certainly the results of such retrospection are matters upon which we are justified in indulging mutual congratulations. Yet, as certainly as our achievements have been great, so certainly have they been accomplished, in the main, so far as relates to the cultivation of fruits, by persevering industry, almost unaided by scientific research. It is a lamentable fact that those who are engaged in fruit growing in the West have little time and less money to expend in that close study and careful experimentation which are needed to insure progress. But it is a cheering sign of an appreciation of this difficulty, that horticulturists in the West are now demanding the establishment of experiment stations, at which all the conditions of soil, climate and various modes of culture, with their effects upon both tree and fruit, will be carefully studied and recorded by competent persons whose time and attention will not be diverted from their special work. In our own State of Illinois we started out well in this direction when our Industrial University was established. A very large number of species and varieties of fruit trees and timber trees were planted, but the attention of those who had these experiments in charge was in a large measure drawn from this work into other channels, and little practical benefit has resulted. It is quite evident that the comparative value to the State of thorough work in

this branch of agriculture has not been fully appreciated by a majority of the Board of Trustees of this institution. But the time has come when we should no longer ignore the importance of this work. We have seen our trees, reputed hardy, swept from our orchards by the intense cold of winter or the fierce heat of summer, and have, as yet, comparatively little knowledge of the condition of tree, soil or exposure through which such destruction can be avoided. We find the fruit trees upon our prairies short-lived, and yet are almost entirely in ignorance as to the means of increasing their longevity. Our forests, groves and timber belts are prematurely thinned or entirely destroyed by causes which we have not the time, skill or scientific knowledge to discover. Must this state of things continue? While the Great West is astonishing the world by its progress in agriculture and the arts, shall horticulture keep pace with these, or be doomed to fall behind—a confessed exception, whose many obstacles and enemies dishearten its friends by baffling their efforts and seeming to defy alike the skill of the cultivator and the discoveries and appliances of the scientist?

I trust every intelligent horticulturist in the West will respond an emphatic *no* to such a proposition. But if our chosen art is to keep place with its fellows, this progress will be, it *must* be, achieved through renewed zeal, increasing intelligence and a more patient, persevering industry than has hitherto been practiced. I write this, not to dishearten but to nerve ourselves for the battle which is before us. If there are lions in our path there is strength in the mighty intellect of *man* to vanquish them. We are now learning, through the patient researches and experiments of our State Entomologist, and the Professor of Horticulture in our Industrial University, how to circumvent some of the enemies of horticulture, and how to route and destroy others.

Let these successes encourage us in our efforts to combat still other and more formidable foes. I am aware that it is popular to believe that there is no remedy for adverse climatic conditions: that we can neither control them nor provide against their frequent and terrible disasters like that which has overspread so many Western States during the last year.

I admit that meteorological science has not yet arrived at that point in its progress where it can direct the means to prevent the Arctic blasts of winter from descending with destructive intensity upon our orchards and vineyards, or to ward off those cold north-east winds and rains which so often sweep over our orchards at the time of blooming, chilling the vitality from the germs of our fruits. Yet, by careful study we may hope to place both soil and tree in such condition as to render these extremes far less damaging than they have hitherto been.

Doubtless this meteorological lion is far the most formidable and ferocious of any which has ever beset the pathway of the horti-

culturist. But shall we quail before him? Shall we admit that the limit has been reached in the human control of the great force which is the cause of all meteorological phenomena? Such an admission would be at variance with the records of past achievements in science, and with the universal law of development. We have seen that each step taken in scientific progress prepares the way for another: each field explored opens the way to other and richer fields beyond.

These considerations should inspire us with hope that the limit of control which man has assumed over the various forms of force will not be reached until it is made subservient to his will in enabling him to secure with almost absolute certainty a remuneration for his labor in the fruits of the earth. Acceleration in the growth and ripening of fruits and vegetables, by means of currents of electricity artificially directed through the soil in which they grow, has been many times achieved; and although this mode has not, as yet, proved an economical one, yet these experiments are indexes in the direction of progress, inasmuch as they prove the direct agency of this form of force in preparing the chemical constituents of the soil for immediate use in plant growth.

It seemed to me that the key-note of progress in this direction was struck when, many years since, Prof. J. B. Turner announced in the hearing of many of us his belief in the *unity* of *force;* and this note was echoed, years afterwards, by eastern scientists in the announcement of the correlation of forces (or different forms of force); and still later in that of the conservation of electric energy by human devices.

In my haste I long since said, "I hope to live to see the day, when, through the agency of appliances suggested by these important discoveries, our fruits, trees and plants may be produced in perfection with a certainty which will almost set at defiance the meteorological lions which ever and anon cross our path and defeat our purposes."

But the hope of pecuniary advantage in this direction has not been as flattering as in others, and, consequently, investigation here has lagged, and experiments have been almost discontinued. But when our streets and homes are lighted, our fires kindled, our vehicles and machinery all moved by that which is the cause or antecedent of light, heat and motion, then may we reasonably hope, scientists will turn their attention more in the direction of our beloved art; or, which will be far better, the nature of force will have become so generally understood by intelligent people, and devices for controlling and directing it become so simplified and cheapened that success in horticulture will become the rule and failure the rare exception.

But the time for this happy consummation of our hopes may not be in the *near* future, and we should not idly wait its slow evolution.

Means, more immediate and reasonably effective, are within our reach, and to these we must devote our attention and our best energies.

There can be little doubt of the efficiency of Horticultural Experiment Stations, provided they are well endowed and placed in the hands of such persons as I have herein described. We have found that analyses of soils and of the wood leaf and fruits of trees are not sufficient indications as to the steps toward results.

We have found that it does not follow that where all the elements are found in or artificially applied to the soil which are demanded by the tree, plant, and fruit, that satisfactory growth and fruitage are the result. Hence it seems an absolute necessity that experiments in horticulture embrace not only chemical analysis of soils, plants and fruits, but the mechanical condition of the elements of plant food in the soils, and the means which Nature uses, and the means to assist Nature in liberating these elements from any unfavorable combinations and *feeding* them to the growing plants. It is obvious that such work — involving the deepest researches into "the hidden mysteries of Nature" — will not, in fact cannot, be done by even the most intelligent and and higly educated farmers upon ordinary farms, and whose attention is necessarily largely devoted to other matters.

In view of these considerations I urge upon this Society, as one of the most hopeful directions in which it can exert its influence — the securing through our State Legislature the establishment of Horticultural Experiment Stations in connection with our Agricultural College, and to suggest, through a competent committee, a plan for the conduct of the experiments. This work cannot be accomplished by resolutions and petitions; it requires intelligent and persistent personal effort by a committee whose work shall be indorsed and sustained by this Society.

The great Commonwealth of Illinois — out of debt and rich — without a rival in its agricultural resources, can well afford the small expenditure such an enterprise would demand. In fact she cannot afford to neglect this important work. Her sister State of Iowa is setting a good example; though what she has already done is hardly a tithe of what our own State should do.

But what can we, as individual cultivators, do upon our own farms and in our own gardens toward making fruit growing more successful, more uniformly profitable, in the future than it has been in the past? Much, in many ways. I have referred to what we have accomplished; and surely experience should beget wisdom in this as well as in other departments of industry. We know now much better than in former years how to gain the victory over many species of our insect foes.

Let us apply the remedies and preventives which have been found efficient. We are yearly learning more concerning the nature of some

of the diseases which attack tree, plant, and fruit. Let us be unfaltering in our efforts to apply and improve upon the knowledge gained.

We have certainly learned that constant vigilance is the only reasonable condition for success.

Let us, then, plant no larger orchards than can be kept under our own strict supervision, bestowing as much thought in systematically rearing and feeding our trees as we do in raising our fine live stock; studying the *special* habits of each species and variety, and adapting our treatment to suit the needs of each.

Nearly all the western orchardists have wisely banished the murderous saw from their orchards, calling it into use only when a dead branch is found. The practice of training orchard trees of all species while young to throw out their branches near the ground, is gaining followers every year, as this is found the only form in which many varieties can be grown to secure a reasonably healthy condition, and close observers have found such trees of all species generally more robust and hardy.

The production of new varieties by cross fertilization has often been urged upon the members of this Society; yet so much skill is required in the artificial application of pollen grains to prevent the ingress of pollen dust from without, when, as is usually the case at the time the work must be done, the air is filled with them that success is doubtful. Certainly any one may be fairly successful in obtaining desirable varieties by planting the varieties designed as the parents of a new race of seedlings, in close proximity to each other, and yet far removed from all others of the same species. Seed from fruit grown under such circumstances is very likely to produce some plants which will combine the qualities of the parents.

But I will not farther digress into special modes of propagation and culture. The reports of our committees will, I trust, cover all this important ground.

A careful selection of the most promising among hardy and productive chance seedling fruits is a work in which we may all engage with profit. The addition of such varieties as the Salome, the Wythe, and others to our list of apples, and the Wager to the list of peaches, should encourage us to persevere in this good work. It is quite probable that by this course alone we may soon boast of a list of varieties as valuable for the West as are the Baldwin, the Rhode Island Greening, the Northern Spy, and the Newtown Pippin for the East; the acquisition of the Salome is certainly a long stride in this direction.

In the cultivation of the small fruits our progress has been as successful as we could reasonably hope. Nearly all species adapted to our latitude are now grown in quantity and quality to suit the reasonable demands of both grower and consumer. The hope of immediate profitable returns to the cultivator, together with the fact

that the conditions for successful culture are more under his immediate control than are those of orchard fruits, naturally secure to this class of fruits their full share of attention.

The rapidly increasing demand for these healthful and delicious articles of diet will be a sufficient incentive to a largely increasing production.

There is need for greater diligence in planting groves and belts of timber upon the prairies of Illinois than has hitherto marked our history. Much has been done in this direction, it is true, but we need to look over the field every year to keep our minds continually impressed with the importance of this work, so that by both precept and example we may aid in its prosecution.

Let us also urge upon our representatives in Congress to use their influence and cast their votes in favor of the preservation of American forests, as recommended by the President of the United States in his recent message.

Upon the whole, the out-look for horticulture in our State is fairly promising. Although clouds now darken the horizon of the orchardists, yet we have reason to hope that these will be gradually but surely dispersed by the light which science will continue to pour, with ever-increasing brightness, upon our art; disclosing new fields and continually revealing improved modes of propagation and culture.

Let it be our purpose to be ever on the alert to catch even the faintest glimmers of this light, to hear even the softest whispers of Nature as she reveals to us her eternal laws; and with a will which yields to no obstacles; with that persistent energy which recognizes no defeat, to press forward in our chosen work until our beautiful Prairie State shall be the peer of the most favored of her sisters in the products of her groves, her orchards, her vineyards, and her gardens, as she now is in the production of cereals and domestic animals.

In adopting our seal we have avowed our faith in the co-equal trinity of the beautiful goddesses, Ceres, Pomona and Flora; and since the realms of Flora and Pomona are both committed to our special care, let us see to it that each contributes its full share of happiness to the human race.

At its conclusion the address was heartily applauded, and upon motion of Mr. Earle, the chair was instructed to appoint a committee on the President's Address.

Messrs. Parker Earle, Tyler McWhorter, and John M. Pearson, were so appointed.

President Galusha, upon resuming the chair announced that the Society would listen to an address by Prof. S. A. Forbes, of Normal University, of the committee on Entomology and Ornithology.

ON A CONTAGIOUS DISEASE OF CATERPILLARS.

BY S. A. FORBES.

When a new country of diversified surface and varied character is first opened up to settlement, — one containing prairie and forest, gravelly knoll and treacherous swamp, barren mountain-side and rich alluvial valley, — the pioneers of the region fix always at first upon the richest tracts which are easily worked, and will yield them a prompt return with as little outlay as possible of capital and labor. The open prairie, lying fairly ready for the plow, will be occupied long before the woodland, the hill before the marsh, the valley before the rocky height: and the alluvial river bottom, subject to frequent overflow, will be left until the pressure of population, the increased wealth of the country, and the more generous returns of agriculture will warrant reclamation by the costly structures of the civil engineer.

Much of this territory, neglected by the early settlers, may be waste and naturally almost worthless; but much of it, on the other hand, will be the most productive and valuable of all, when once brought under human control.

Further, the *processes of agriculture* adopted by the pioneer will be rude and superficial, as compared with those of the generation following him. He will not need to trouble himself with the subsoil plow, because, where land is to be had almost for the asking, the same amount of labor which it would take to plow a small area to the depth of ten or fifteen inches, will reap a greater reward if spent in turning over a larger area to the depth of four. He will care nothing for fertilizers, for no superphosphates or guano can possibly add enough to the value of the bountiful crops springing freely from his virgin soil to repay the expense of their purchase, transportation and application. Even tile draining will be, relatively speaking, a waste of money, for he can invest his surplus savings to better advantage by buying more land at two or three dollars per acre, and cultivating only the dryer portions of it, than by making extensive improvements on the less tractable parts of that which he already owns. Much that many are accustomed to blame severely as waste and shiftlessness and indolence is, at this period of a country's development, really justifiable on the strict grounds of economic science. It does not *pay* the original settler at first to plow deep, to save his barn-yard manure, to glean the last head from his harvest fields, to build barns for the protection of his wild prairie hay. He can spend what strength and money he has more profitably in other ways, — ways which to his father and grandfather would have looked like the prelude to speedy ruin, but which he knows to be, in his circumstances, the sure conditions of prosperity.

But, with the gradual "growth of the country," as we call it, there comes a change. The richest soils become exhausted by constant cropping, and must be artificially enriched; soon it is found that tracts, naturally too poor to be profitably cultivated when land and produce were cheap, now that the returns from land and land itself have materially appreciated, will repay inclosing and bringing under the plow. Then this appreciation reaches a point where it pays to reclaim the swamps, and ditches are dug and drains are laid; and where it pays to protect extensive bottom lands against overflow, and then levees are built and river channels are straightened and deepened. In the meantime, costly machinery has come into profitable use to replace the simple hand implements of the pioneer; and care and skill and thoughtfulness and education and ability of no mean order are finally found necessary to the farmer, if he is to compete successfully with his neighbors, and with his rivals for a market in other lands.

I have rapidly reviewed this course of events in the development of a new country, with which many of you are personally familiar, because a very similar account might be written of the development of the science and the art of economic entomology. These, too, have had their pioneer age,—a time when the lonely squatter upon a boundless western plain was not more isolated and lonely than the scattered students of insects in their relation to agriculture—a time of the boundless fertility of an undisturbed soil, when the happy entomologist could hardly take a morning walk in his garden without having his eyes saluted with some new and important fact respecting the relations of insects to human industries and interests; a time when a first-class microscope was as superfluous for him as a hand-plow for the sod-corn farmer; when a pair of good eyes, a habit of observation, and a capacity for accurate statement were about all the qualifications needed to make one a most useful and productive worker in this department of knowledge.

Then came the period of rapid extension of culture, if I may so describe it; the time when Harris in Massachusetts, Fitch in New York, Walsh, LeBaron and Thomas in Illinois, and Riley in Missouri, were, with indefatigable activity and distinguished success, extending the boundaries of our knowledge over the larger part of the area of economic entomology; cultivating this area, I will not say superficially, but in the somewhat rapid and cursory manner which the very nature of the case and the circumstances of the time rendered not only inevitable but best and most profitable.

What a long list of insects have been treated, more or less thoroughly, by these prolific writers, and, nevertheless, how few of even the most destructive of them are yet completely known. How little experimental work of the thorough, intelligent, accurate and exhaustive sort which the subject demands, has yet been done. It is evident, in short, that while this period of the progressive occupation of the

country is drawing to a close, the entomological low-lands are most of them undrained, the river banks are undefended, the less productive regions lie neglected, and the sub-soil plow, the spade of the ditcher, and the elaborate processes of a more highly developed agriculture, are next in order.

Take the chinch-bug and the army worm, for example. We have learned to know these at sight, in all their stages; we know the outlines of their life histories, in average years; we understand fairly well the terrible effects of the perodical inundations of insect life to which they subject our lands; but how little we know of the whence, or the how, or the why, of the laws and the limits of these vast and desolating floods; and how cheap and feeble are the barriers which we have as yet been taught to erect against them. A simple furrow, run with a plow or dug with a spade, — a tarred fence-board set on edge, — a sprinkler charged with the kerosene emulsion, — each single individual left to fight the whole outburst for himself and alone, — this is about all that has hitherto been devised. Here and there a farm may be partly guarded by such means for a little time, but that is about all that we can say.

Perhaps I have now sufficiently illustrated my meaning when I add that it must be perfectly clear to one who surveys the course of the progress of knowledge in economic biology, whether we deal with insects, with birds, with fishes, or with plant parasites, that the next ten or fifteen years should be characterized less by cursory observation and record of the surface facts than by thorough investigation and research, by broad generalization, and by elaborate, critical experiment. The microscope will come into use fully as often as the insect net, the record-book of the experimenter will be as voluminous as the note-book of the field observer; on the obscure problems of economic entomology we shall try the cross-lights of chemistry, of botany, of microscopy, and of a scientific agriculture. In a word, the period of mere observation is passing, and that of investigation is next at hand; — has, indeed, already come, as is shown by the more elaborate and thorough-going work of recent times, (notably that of the United States Department of Agriculture), as compared with that of former days.

And now, returning for a moment to the figure with which I began, I propose to submit to you a preliminary report of a *plan for draining an entomological swamp*, — for opening up to occupation and use a territory of most fertile promise, but so difficult of access as to have been left hitherto almost unexplored, and requiring for its reclamation methods and instruments which have but lately even been discovered.

And yet I think that I shall be able to give you good reasons for hoping, if not for believing, that this obscure region is one of extraordinary value; that, if it can reclaimed, it will be such an addition to our resources against injurious insects as has not been made for

many a year, and that the task of subduing it is not one of great magnitude, or involving extraordinary expense or delay.

There is, perhaps, no subject, unless it be the details of the doctrine of evolution, which is to-day receiving more active, acute, skillful, learned, and thorough-going scientific investigation than that of the causes, origin and control of contagious disease. It is easy to cite illustrious examples of this fact. The brilliant discovery by Koch, of Germany, that consumption is due to a parasitic bacterium, his *Bacillus tuberculosis*, a conclusion now so well established that the treatment of that disease in the army hospitals of the German Empire is based upon it; the equally brilliant, if not equally important, discoveries of Pasteur, that splenic fever of cattle and the charbon of sheep are likewise germ diseases, and that their ravages may be almost wholly prevented by inoculation: the triumphant demonstration by the same savant, — an older discovery, but one more important to our subject, — that the pébrine of the silk-worm, and the scarcely less fatal and destructive flachérie of that insect, are also contagious germ diseases, unquestionably caused by the noxious action of bacteria upon otherwise healthy individuals; these are instances more or less familiar to all who read. It is in medical circles that this ferment is most actively working; and one can hardly pick up a medical journal in any language, at the present time, without seeing something on the relations of bacteria to disease. Of course the end proposed in all these extensive, laborious, and most difficult researches, is that of prevention or remedy. The problem with which *we* have to deal to-night is, however, the reverse of that. The task I have set myself is to throw what light I can, in the brief time allowed me, on the *contagious diseases of insects*, and on methods of spreading, intensifying and accelerating such diseases.

In this country, I do not know that anything of any importance had been done upon this subject, up to about a year ago, when I made a careful preliminary study of an apparent destructive germ disease of the chinch-bug, some account of which is given in my report as State Entomologist for 1882. In Europe, however, a considerable mass of observations has been accumulated, and some careful and conclusive studies and experiments have been made by biologists of world-wide renown. The studies of the diseases of the silk-worm by Pasteur have already been mentioned, and the foul-brood of bees, — a contagious affection of bee larvæ, destroying them while yet imprisoned in the cells of the comb, has also been carefully worked out by several German naturalists. Metschnikoff, an eminent Russian biologist, and the great botanist, De Bary, have made numerous and highly successful experiments directed to the point in which I have sought to interest you; to that of producing disease in healthy insects, although both these scientists were engaged on insect diseases produced by fungi much higher in organization than the bacteria with which we have to do this evening.

In studying the diseases of insects I have sought answers to three questions: First, Is this disease contagious? for, if not, it is probably beyond our control for practical purposes. Second, If so, what is the character of this contagion? and third, Can it be used profitably for the artificial destruction of our insect enemies?

There is a common affection of our native caterpillars with which all who attempt to rear these insects to the perfect stage are more or less familiar, because it is very likely to break out in their breeding cages, often with most destructive effect; but it seems hitherto to have been but rarely noticed among caterpillars living in a state of freedom, and the literature of economic entomology is almost silent upon it. I shall endeavor to show you, from studies which I have made this fall, that this is a true contagious disease, the same in fact as one of the most destructive diseases of the silk-worm; that it occurs in a most virulent form among injurious insects in a state of nature and in the open air; that its germ or virus is a minute bacterium infesting the alimentary canal; that this can be cultivated easily in organic infusions; and that when so cultivated it may be used to set up the disease among healthy insects, and may be easily preserved from season to season and from year to year.

As the disease which I studied proved to be of the same nature as one of those affecting the silk-worm, differing only as we should expect it to differ when appearing in insects of other species, I will preface my account of my own observations by a brief summary of the discoveries of Pasteur on this disease,—called *flachérie* by the French, and *schlaffsucht* by the Germans.

This is now the most destructive disease of the silk-worm, and is said by high authority to damage the silk-producing countries of Europe at the rate of hundreds of millions annually. During the last ten years it has reduced the average income of the silk-worm breeder twenty-five per cent., and was the principal cause of an enormous falling off in the silk product of 1879, which did not amount to more than a fourth of an average yield.

The external symptoms of this affection are not at first especially noticeable. The caterpillar loses its appetite, digests its food imperfectly, wanders away from its feeding-place, becomes sluggish and slow in its movements, and afterwards shrunken in aspect, and soft and flabby to the touch. Sometimes it gradually blackens, as if from decay, but in other cases presents hardly any of the visible appearances of disease until death overtakes it. The dead worms rapidly soften, and in a day or two are mere rotten skins, filled with a greyish brown fluid which swarms with bacteria.

If the juices of the alimentary canal of a diseased worm are examined microscopically, they are invariably found to contain innumerable myriads of a minute organism, a plant of the simplest possible structure—each a perfectly simple cell, oval in outline—usually connected end to end in pairs, but sometimes in short strings of from

four to eight individuals. They are only $\frac{1}{5000}$ of an inch in diameter,—so excessively minute that it would take more than eight millions of them to cover the head of an ordinary pin, while the extreme tip of an average point of such a pin would give room for more than eighty thousand of them to lie side by side. These have been described by Cohn under the name of *Micrococcus bombycis*, and are the characteristic bacterium of this disease. At first the most careful search will not discover them in the blood; but usually, before death, they seem to penetrate the intestinal wall and swarm in all the fluids of the body. That the disease they characterize is contagious was shown by Pasteur by numerous experiments like the following:

On the 20th of May he selected three identical lots of perfectly healthy worms, twenty-five in each lot, which had nearly got their growth. One of these he set aside as a check lot, and gave it the usual treatment of the silk-worm. The food of the second twenty-five was sprinkled with dry dust from a silk-worm hatchery which had been occupied the previous year by worms sick with flachérie. The food of the third lot was treated with the same dust suspended in water and sprinkled upon it. The check lot went through their transformations without accident, all in perfect condition. Of the second lot, the food of which was powdered with infected dust, two worms died of flachérie on the 21st, two on the 22d, three on the 24th, one on the 25th, one on the 28th, one on the 31st, and thirteen of the worms transformed into chrysalids, one of which was diseased. From the third lot, three dead worms were removed on the 21st, three on the 22d, two on the 23d, one on the 24th, three on the 25th, two on the 26th, and two, evidently seriously diseased, were removed on the 29th. Another worm died on this day, and only seven chrysalids were finally produced. This experiment showed clearly that dust from an infected hatchery, which had been unoccupied for a year, still contained the virus of the disease in an active state. Again, on the 23d of May, the food of twenty healthy worms was brushed with the contents of the intestinal canal of a silk-worm at the point of death with flachérie. Six days after one worm was dead; on the next day another. On the 1st of June one died, on the 4th two, on the 5th another, and on the 7th two more. Twelve cocoons, two of them diseased, resulted from these twenty worms. On the 22d of May twenty-five perfectly healthy worms were similarly infected with water in which a fragment of a worm dead from flachérie had been macerated for a short time. The worms ate, without reluctance, the leaves upon which this fluid had been brushed. On the evening of the next day two of them were dead; on the morning of the 24th two more, and in the afternoon another. Two died on the 25th, one on the 28th, and four on the 30th. On the 1st of June one died, on the 3d another, on the 7th still another. Nine finally transformed into chrysalids; but in five of these nine, bacteria were found, indi-

cating their unhealthy condition. Next, to test the possibility of infection by exposing healthy worms to those already suffering from the disease, Pasteur placed twenty-five perfectly sound specimens with twenty-five others which had inherited the disease from unhealthy ancestors. He also set aside another lot of twenty-five, identical with those exposed to the contagion, as a check lot. All the latter transformed without accident, in due season, every specimen coming through in perfect health. Of those exposed to the infection, two died on the 16th, two more on the 18th, one on the 20th, nine on the 21st, five on the 22d, and four on the 23d of May. Then, after a brief interval, another died on the 26th; five on the 29th, and again five on the 30th, six on the 31st, two on the 2d of June, and one on the 3d, at which time only two remained alive, and these finally transformed to chrysalids. Of the second twenty-five mingled with these, the victims of the hereditary transmission of flacherie, not one transformed, but all perished of the disease. It is clear from these experiments that flachérie is directly contagious, and that it may be conveyed artificially by the use of material obtained from unhealthy worms. The fact should also be mentioned, that in every case where worms died from this disease, Pasteur found the characteristic bacterial forms in the intestines, with the exception of two which died the day following the treatment of their food with dust from the infected hatchery. In this case it is probable that the mechanical irritation or poisonous chemical character of the material used had something to do with the fatal effect. Other experiments of Pasteur tended to show that flachérie might be produced by treating the food of healthy worms with the fermenting infusion of mulberry leaves alone, in which it is presumed that only the ordinary bacteria of fermentation and putrefaction actually occurred. He leaves us in doubt, however, whether these fluids might not also have become accidentally infected with the characteristic *Micrococcus bombycis* of the silk-worm disease, and I have myself little doubt that this was the case, since I have found it very difficult to keep fermentable fluids free from these bacteria, if exposed where liable to infection.

There is also some ground for believing that flachérie is sometimes spontaneous, arising where the worms are too much crowded, where the quality of the food is inferior, and where the ventilation of the breeding houses is poor. As it is, however, practically impossible to say that worms suffering from it under such circumstances have *not* been exposed to this subtle contagion, which may easily have been wafted to them on any breeze, it must remain doubtful whether such unfavorable conditions can really originate the disease *de novo*, or whether they merely stimulate the development of the offending bacteria by reducing the vitality of the larvæ.

I think that the above must satisfy you that flachérie or schlaffsucht of the *silk-worm* is a contagious disease; that the contagion may be artificially communicated with success to healthy worms;

and that the bacteria producing it may be preserved without loss of effectiveness over at least one year,—requiring in fact no particular preparation or care to that end. It would therefore be sufficient for my present purpose to show that the affection of our native caterpillars, which I shall presently describe, is really identical in its essential characters with that above discussed; since this would justify us in applying these conclusions to the disease as shown in our cabbage-worm and apple-tree caterpillar; but not content with this, I have made some additional experiments for the purpose of putting these conclusions on an independent basis.

I can report here only a small part of the studies which I have made, and shall content myself with a description of the disease as it appeared in the European cabbage-worm this fall, and of some experimental results obtained in studying it in this insect and in the yellow-necked apple caterpillar *(Datana ministra)*.

I suppose that many of you, at least of those living in the northern and eastern part of State, must have noticed with surprise the curious fate which overtook a large percentage of the cabbage-worms of nearly every field this fall. Hundreds of the bodies of these pests were to be seen rotting on the cabbage leaves, or dried to a shrunken, blackened remnant, often twenty or thirty to a single head at once.

Among those with whom I have talked about the matter, all sorts of hypotheses were prevalent. Some supposed that the season had been too wet for the worms; others, that the weather had been too dry. Some explained the difficulty as due to unusual heat, and others, as clearly a consequence of unusual cold; while still others looked upon it as conclusive evidence that the lime or salt or ashes or what-not with which they had sprinkled their cabbages, had taken effect, and was, after all, the remedy of remedies for cabbage-worms.

This cabbage-worm plague was quite unevenly distributed; some small and isolated fields not exhibiting a trace of it, while others but a little way distant, were fairly reeking with death and decay. It increased in severity with the advance of the season, until in the latter part of October and in November it was a rare thing in my vicinity to see a healthy chrysalis. Nearly every worm perished before maturity.

It seems also to have progressed from the east westward, not appearing in Fulton and Stark Counties until some weeks after we noted it here, and not reaching Iowa at all, as far as I have been able to learn.

On the other hand it was barely remarked near Washington three years ago, although no particular attention was paid to it. It certainly was not abroad here last year, as we were carefully experimenting upon the cabbage worm all the autumn, both in the field and the laboratory, and could not possibly have failed to detect it.

We can conceive something of the significance of this disease if we imagine the terror and dread which would seize mankind if such a plague should suddenly assail human life. Whole towns would be depopulated, and the dead would rot in the streets by hundreds. There would be no escape for any, because the contagion would be conveyed by the very food and drink by which life was sustained; the fountain of life itself would be poisoned.

This disease of the cabbage worm first came to my notice on the 11th of September, when an assistant, who had been sent into the field for larvæ for experimental use, brought in one which had apparently been dead for some time, and was blackened and somewhat shrunken. On dissection, the intestine was found full of undigested food and swarming with bacteria of a species which I afterwards came to recognize as those characterizing schlaffsucht in the cabbage worm and also in a caterpillar *(Datana angusi)* which eats the leaves of walnut and hickory. These were excessively minute spheres, $\frac{1}{25000}$ of an inch in diameter, sometimes single, sometimes in pairsand occasionally in strings of from four to eight. The same day two lots each of twenty-five healthy worms of various ages, most of them about to transform to pupæ, were placed in breeding cages for use in an experiment of which I need say nothing further since the occurrences about to be described made it impossible to carry it out. It was noticed that some of these worms were paler than others, and soon these became torpid and quit their food. On the 15th one died, on the 16th another, on the 17th seven more, some of these being mere deliquescent masses of rottenness within twenty hours from the time when their health was apparently perfect. And so, all went. Of ninety cabbage worms brought to the laboratory, fed regularly and carefully attended, only four or five ever reached the pupa stage, and not one of these emerged as a butterfly.

In the meantime the same plague was raging scarcely less destructively in the open air. Not a field visited anywhere about Bloomington or Normal was finally free from it. Prof. French wrote me of its occurrence at Carbondale, Prof. Burrill heard of it at Champaign, I found it in cabbage fields near Chicago, and a correspondent in Michigan also found it there. Later, as already mentioned, it reached Stark and Fulton Counties to the westward. During this time we made most careful microscopic studies of twenty-eight specimens in various stages of disease, besides several of healthy worms, examined for comparison. All these diseased individuals, whether in field or laboratory, agreed in several particulars; and differed in these same particulars from the healthy ones.

Among them were the pale color, sometimes followed by a partial blackening of the skin, the torpidity and loss of appetite, the sluggish digestion, (the intestines of dead larvæ being usually full of green food scarcely altered since it was swallowed), and the presence

of the peculiar micrococci already referred to in the alimentary canal. Invariably, after death, decay was astonishingly rapid, the larvæ in a few hours breaking down to a grayish fluid mass. In all these particulars it is clear that the affection of the cabbage worm is the close copy of flachérie of the silk-worm, and fully as rapid and destructive in the former species as in the latter.

We have now to deal with its *contagious* character. In my own vicinity it was evidently impossible to make any experiments with the cabbage-worm on this point, because all the worms in the region had been so generally exposed to the contagion, that I could not find healthy larvæ for the purpose. I could not keep my specimens alive long enough to kill them. I made, however, a few attempts to settle the question through others. To Prof. Osborne, of the Iowa Agricultural College, I sent some diseased worms with the request that he would place them in company with healthy worms on cabbage-heads in the open air, the disease not having yet appeared in his vicinity. I also sent him microscope slides of the blood and intestinal fluids of sick larvæ, that he might be able to recognize the disease if it should appear. A few days after receiving these, he wrote me that the contagion had apparently taken effect, as a single worm was already giving unmistakable evidence of the disease. But, unfortunately, during his absence from home, the cabbages in the field under observation were all gathered by the gardener, and the experiment was thus abruptly terminated.* I also sent two boxes of specimens to my friend Dr. Boardman, in Stark County, who had made careful search there in a large number of fields in his vicinity, in October, without finding a trace of the disease. These specimens he received after several days delay, and placed others with them in the boxes, twenty-five healthy larvæ in each box, at the same time placing as many others in a clean box, as a check lot. All were fed and cared for alike, but in a few days he wrote me that every one of those placed with the sick worms was dead, while the others had completed their transformations in good condition. The only drawback to this result was the fact that the disease began to appear spontaneously at about this time in his region, so that there was a bare possibility that it was already latent in the two lots of larvæ which perished under experiment, while the others had escaped it.

For further light on the contagious character of the disease, and especially on the possibility of cultivating its virus artificially, and using it for the purposes of economic entomology, I must go back a few weeks to some studies of the same affection made previously on two other species of caterpillar,—the yellow-necked caterpillar of the apple tree *(Datana ministra)*,—and another species or variety of

* Since the above was written, Prof. Osborne has informed me that he afterwards collected as many worms as he could find in the debris of his cabbage field, and exposed them to the remains of the diseased larvæ which I had sent him, and that a number of them died of the original disease under conditions such as to render it certain that they derived it by contagion from the source mentioned.

the same genus *(Datana angusi)*,—the first eating the foliage of the apple, and the second that of the walnut, hickory, etc.

I need not rehearse the symptoms as manifested in these caterpillars, and will only say that they differed from those of the cabbage-worm scarcely at all except in the particular that the apple and walnut caterpillars did not change color—which was doubtless due to their much thicker skins,—and in the fact that decay after death was less rapid and complete.

Here, as in the cabbage-worms, I found in every case of disease, without exception, vast numbers of bacteria belonging to the genus micrococcus infesting the alimentary canal; in the case of the apple caterpillar, the same precise species as that of the silk-worm *(Micrococcus bombycis)*; and in the walnut caterpillar a Micrococcus which I have not yet been able to distinguish from that of the cabbage-worm, and which I think to be certainly the same.

Both these micrococci I succeeded in cultivating, again and again, in beef broth, using, of course, every known precaution against the invasion of my culture fluids by other forms of bacteria than those with which the sick larvæ were affected. The minutest droplet of fluid from a diseased worm introduced into a flask of beef broth would, in a day or two, render the whole contents of the flask milky with the myriads upon myriads of micrococci resulting, and these were in every case precisely the same as those taken from diseased larvæ. Hundreds of microscope slides of these cultures were mounted, and have since been carefully studied by Prof. Burrill and myself, and he has no more doubt than I that these cultures were genuine.

Next I selected two lots of healthy larvæ of the apple caterpillar, ten in each, set one aside as a check lot, and devoted the other to experiment. The leaves fed the latter were brushed from time to time with the fluid containing the cultivated micrococci, and the food of the other lot was moistened in the same way with distilled water. On the 3d it was noticed that one of the worms of the infected lot was stupid and ate but little, and the next day one died, and two others were evidently sick. The dead larva was carefully studied and the silk-worm micrococcus, the same species as that with which its food had been treated, was found in great abundance in its intestines and blood. On the fifth day another died, and on the sixth day another, both alive with bacteria in the blood and alimentary canal. On the 9th two were very sick, and one of these was killed for examination. It was found swarming with *Micrococcus bombycis*, like all the preceding. On the 11th day one died, and on the 13th another, both in the same condition. Four days after, one of the four now remaining, which was seen to be apparently sick, was killed, and a droplet of fluid from its alimentary canal was used to infect a test tube of beef broth. In a few days this developed a great quantity of *Micrococcus bombycis*. In the mean time one of the examples

kept in a separate cage as a check lot, and fed with leaves brushed with distilled water, had died of schlaffsucht, and the disease also appeared among other larvæ in the laboratory, showing that it had either escaped from our control, or else had developed spontaneously —in either case making further experiment valueless. As a result, therefore, of this experiment, we can only say that seven of ten infected larvæ were attacked by schlaffsucht, and only one of those not infected.

Putting now all these facts together,—the result of the studies of Pasteur on schlaffsucht of the silk-worm, the evident identity of this disease with that of the cabbage-worm and of the other caterpillars experimented upon, the indications I have given of the contagious character of the cabbage-worm disease as shown by the experiments of Prof. Osborne and Dr. Boardman, the readiness with which its germs may be artificially cultivated, and the reproduction of the disease in apparently healthy insects by treating their food with fluids containing these germs,—I believe that we have fair grounds for at least a reasonable hope that out of all this we may bring an important addition to our means of defence against injurious insects.

I have now under way experiments which will show the length of life of these germs,—that is, the time for which they may be kept either alive or in a condition of latent activity. There is every reason to suppose that they may be preserved from season to season, as the very similar virus of cow-pox is frequently kept for vaccination; but we must test this matter exactly. From such preserved material it will be easy to start new cultures next year, and to experiment with it on a larger scale. A fruit jar of fresh beef broth, for example, may, next summer, be infected with the contents of one of my sealed tubes, or with a little portion of one of my dried films, and afterwards sealed as when fruit is canned. If the germs these contain are then living, the beef broth will, in a day or two, become milky with untold myriads of the rapidly multiplying micrococc, and a quart of this fluid poured into a barrel of water would doubtless furnish a virus of sufficient strength to inoculate effectually a multitude of insects with the disease.

Of course a great deal of difficult work remains to be done before we can talk with much confidence on this matter. I did not promise to drain our entomological swamp to-night, but only to outline a plan for its drainage; and I shall have accomplished the greater part of my present purpose, if I have given you a clear idea of the class of subjects, and the kind of work upon them, from which I believe that we have the most to expect for the future of economic entomology.

Without forgetting the things which are behind, let us press on to the things which are before; without neglecting the current subjects and methods of the economic entomologist, I believe that we

should also apply ourselves to the knotty problems which defy the skill of the mere observer, the entomological specialist, and bring to bear on them the experimental methods of practical biology. Call this paper, if you please, a plea for an advance in the methods of economic entomology; for original, practical, experimental work of a biological character to replace in part the simple observation of insects and their habits; an attempt to add the methods of the biological laboratory to the resources of the economic entomology.

The reading of this paper was listened to with intense interest throughout, and at its conclusion was given the enthusiastic applause it deserved.

J. M. Pearson — I move that a vote of thanks be tendered Prof. Forbes and that he be requested to prepare a copy of his learned essay for publication: which motion was unanimously carried.

Dr. Schrœder — I have read a great deal about the silk-worm and its diseases. Wine and silk are the great industries of France. A few years ago the phylloxera and silk-worm disease almost beggared them, but they sent out Prof. Louis Pasteur, a scientific man like Prof. Forbes, to investigate. He went to work with the microscope and found the remedy, and now the disease is stayed. Prof. Forbes is doing that kind of work for us: do let us hold up the hands of the Professor.

J. M. Pearson — We common fellows do not understand the subject very well and can't do much discussing it. It seems that we must fight the little fellows with still smaller ones. The big bugs we can take care of, but it is the little chaps that bother us most.

Prof. Burrill — When Prof. Pasteur commenced his studies of of the diseases of the silk-worm but little attention was paid to his labor or efforts in that direction. But he preserved and wrote out the whole history of his studies, and it is a work of vast importance to the silk industry of the world. The French Commissioners of Agriculture took hold of the work with energy and directed these scientists to investigate thoroughly; this they did with the best results. Public attention was attracted to it, and now the people approve and highly appreciate the work.

President Galusha then announced that the next thing in order was: Report of Committee on Vegetable Physiology — Prof. T. J. Burrill, Champaign, and Prof. G. H. French, Carbondale. Prof. Burrill came forward and read:

THE GRAPE ROTS.

BY T. J. BURRILL.

Among the host of parasitic fungi affecting our grape vines there are four species which are specially injurious — two usually called mildews, and two rots. The common names are, however, variously applied for those commonly known as mildews often cause the decay of the berries when growing upon them, and are then spoken of as rots, while the terms grey rot, brown rot, and black rot are now used to designate the effect produced by one of these four species of parasites, now another, again another. Practical cultivators do not ordinarily care much what particular species of fungus injures their crops, or whether it is a fungus or insect or anything else so long as some one method may be used to prevent or cure the difficulty, yet our success would be much more certain, and our accounts of experiments far more valuable if such distinctions were carefully made. In the case of these great pests, it is important to know which one of the two mildews is the destructive agent in order to know whether the application of sulphur will be of service or not. In Europe long experience has taught the grape growers the value of flowers of sulphur in destroying mildew, and he who would omit to use the remedy would not be pitied if he lost the season's produce of fruit. So, when men from the old world engage in horticulture work with us, this sulphuring of the vine is one of the established and necessary elements of culture in their opinion. In the same way those who have never crossed the water gain in one way or another the idea that sulphur destroys mildew, and so apply it as an orthodox and essential procedure. Then some one with an observing turn of mind finds that sulphuring does no good, and so reports the heterodox opinion to a society where the subject gets variously discussed. A knows that sulphur kills mildew; B knows it does not, and C, a beginner in the art that doth mend nature, gets sadly mixed in his understanding. In Europe there has been until recently but one species of fungus which showed itself as mildew on the leaves, etc., of the grape. In America, besides this one, or another very similar, a very distinct species with widely different habit also occurs as the white material called mildew. Sulphur is of no avail against the latter, and as it, in the West at least, is much more prevalent one year with another than the other species, sulphuring rarely does any good with us. Yet the process goes on, and the instructions of the books are too often followed by disappointment and loss, the latter both in money and confidence. The species fought with sulphur in Europe has long been known as *Oidium Tuckeri;* ours of like character as *Uncinula Spiralis.* It seems, however, pretty certain that both names belong to the same species which, with us, reaches a second state of development not yet observed in the old world. Whether one or

two, the growth is the same, and always confined to the surface of the leaves, young shoots and berries; *i. e.* the growing threads never penetrate the tissues. This mildew, then, is always accessible to a destructive agent finely dusted over the vine; but the case is wholly different with the species known as *Peronospora viticola*, the most common one with us. This grows through and through the inner tissues of the soft parts of the vine, and only sends out its fruiting threads or stems; there is, therefore, no such thing as reaching it with a something externally applied. Some one proposes to stir the sulphur into the soil that it may be taken up by the roots and sent up through the plant—a bright idea, but unfortunately, evolved without proper knowledge of vegetable philosophy.

Both of these fungi affect all the green parts of the vine, stems, leaves, tendrils, peduncles and fruit. Both show themselves as minute, white, mealy or cobwebby growths. But they are readily enough distinguished. On the leaves—where principally observed—the surface grower is almost entirely confined to the upper side; the inside worker sends its fruit-stems out beneath. The latter are usually clustered in spots, the former are more evenly spread over the surface. In the case of the fruit the inside grower may be best determined by the purplish-red tint, like a blush, which appears on the unripe berries. The color is a suffused tint without definite border, and when once recognized can afterwards be readily known.

Under the microscope the characteristics of the two species are very distinct, so that the merest tyro with the instrument should be able to recognize the form present; but these characteristics need not be given here. When there is any doubt about the matter everyone probably knows some one who is familiar with microscopic work and may appeal to him. In fault of other means send specimens to the President or Secretary of this Society, and if he cannot directly answer it, it will be good for him to find out how to distinguish the parasites, after which he can reply.

The two "rots" are different from the mildews in the fact that they (the rots) never show anything of the white, mealy, or powdery or cobwebby material which gains the name of *mehl-thau*, "meal-dew" or "mildew." As both of the mildews, however, cause the fruit to cease growth, and to finally die and decompose, attention to the berries alone might lead one to incorrect conclusions about the cause. The rots are especially to be distinguished by causing well-defined areas of the berry to change color, and in other ways to indicate the effects of the parasite in such area, while other parts of the berry retains the appearance of health and soundness. The separating line between the diseased and healthy parts is very perceptible, though the affected spot gradually enlarges and may finally include the whole fruit. When the death of the berry is caused by the mildew parasites no such plain boundary of the affected parts is to be seen.

One of the rot species, and the worst with us, is known by the name of *Phoma uvicola*, and the effect is by some called brown rot, perhaps more often black rot. On the berry this shows itself at first as a small, brownish, watery speck, which gradually increases in size, now embracing one-fourth, now one-half, now, perhaps, the whole of the surface. When a quarter of an inch or so across there is a central dot of lighter color; after the discoloration of most of the fruit, careful examination with the unaided eye, or by the help of a hand magnifier, reveals multitudes of little pointed prominences pressing up from beneath the skin. As the berry shrivels these become more readly recognized, and it is not hard to make out that each of the little pustules opens at the apex, and sends out a minute mass of white mucilage-like substance, either in the shape of a little tendril or as a rounded globule. This mass consists of spores which serve to propagate the disease. This same fungus sometimes works on the leaves and young stems, but is not usually seen except on the fruit. There is good evidence a second kind of spores is found during the winter on the old, fallen berries, and that the summer's crop comes from these.

The other rot has had many names, owing in part to its diversity of appearance, size, etc., under different circumstances. It is a severe scourge to the vines in many parts of the old world, but it is not nearly so common with us as the preceding. Many botanists now agree in selecting as the proper scientific name, *sphaceloma ampelinum*, and the French common name of "anthracnose" is perhaps the best for us. Under the effects of the fungus the berry does not really rot. A circumscribed spot is killed, but the part remains dry, and the rest of the fruit continues its growth. After a time cracks usually appear in the dry and hardened rind of the diseased area. Sometimes the seed or seeds, still living and sound, protrude in part from such cracks, presenting a curious appearance. The young shoots, leaf-stalks, tendrils, etc., are often rendered scabby by the growth of the fungus upon them in the same kind of circumscribed areas. A vine badly affected in this way is a pitiable object. It is completely demoralized, as they used to say of the tired boys in the army. Vigor is displaced by weakness, green by purplish-black in spots often thick enough to touch each other; smoothness of surface by brands and scabs, and ultimately, perhaps, life by death.

Now little as these depredators have in common to the eye of the botanist, there is at least one particular of habit in which all agree, namely, that the growth commences from without, and never far from the point where the injury is afterward found. All are propagated by spores borne in the air, none reproduce themselves in the tissues of the affected plants. In no case are spores or other substitutes for them taken upon by the roots; in no case do these reproductive bodies circulate in the sap or fluids of the vine. If a berry is directly affected, the spore germinates on the berry: if a leaf be-

comes penetrated by the growing parts of any one of these or any other fungus, that leaf and that particular part of the leaf first admitted the penetrating point of the germinating spore. This being the case, there is one method of protection which must be good against any of the depredators. Sulphur will not kill three of them, but keeping the spores off prevents all four from development. Or since spores, like seeds, require moisture for their germination, keeping all water off is equally serviceable in prevention. Both are splendidly accomplished, so far as the fruit is concerned, by putting the bunches in paper bags, as soon as or soon after the fruit is formed. The result is sometimes satisfactory when the bagging is done after the berries are half grown, or even later, but perfect reliance cannot be gained for the process unless the earlier time is chosen. In practice it is easier to pin the mouth of the bag than to tie, one or the other must be done. Besides being free from disease the fruit so treated are so much improved in appearance that it might often be worth while to put on the bags for this purpose alone.

Still it remains a question as to whether the returns will justify the expense thus incurred, and this does not admit of one definite answer. Certainly it will abundantly pay for a few grapes for home use, and for market when fancy prices for a fancy article can be commanded; but it seems to me all but impossible to make bagging pay at three cents per pound for grapes.

Practical success is likewise attained by sheltering the vine from rain and dew by any sort of roof-like projection. It is because spores cannot germinate on dry surfaces that vines trained against a building, and under the shelter of the eaves, so often bear full crops of clean fruit, while perhaps parts of the same vine not so sheltered is severely affected by mildew and rot. In my observation, vines trained on stakes and kept closely wound suffer less than those on trellises, and probably because, if the observation is true, that the leaves form a better roof-like protection to the fruit. The worst rot I have noticed has been on straggling vines, not tied up at all.

In the case of the last named rot, which is even more injurious in Europe than with us, good results are reported from carefully picking and burning every affected leaf-stem or berry as soon as observed by careful watching. In any case safety will be promoted by gathering and destroying the old leaves as soon as fallen, or by by practicing pruning before the leaves fall and burning all parts cut away.

PEAR BLIGHT AND PEACH YELLOWS.

BY T. J. BURRILL.

Since the first announcement, three years ago, that the so-called fire-blight of the pear-tree is due to the ferment-action of bacteria, every fact coming to my knowledge upon the subject has helped to confirm the truth of the original statements. There seems to have been no attempt to disprove the conclusions as published in our TRANSACTIONS for 1880, nor has there been any evidence produced showing that anything besides bacteria does this deadly work in the tissues of our pear-trees. I speak now of what may be accounted trustworthy observation, well considered experiment or scientific investigation, not the mere guesses which so often pass for knowledge. Still, there are many who doubt the "bacteria theory," as they choose to call it, and others, some of whom ought to know better, still openly assert that nothing is known of the cause of this disease. It is not now my intention to try to convert any one of either of these classes to my own way of seeing and thinking, neither do I propose now to record additional proofs of the verity of the former reports. That a certain and now well-known species of the minute organisms popularly known as bacteria is the real, active and immediate cause of this blight, is a fixed and positive fact—not a fancy nor a theory; a demonstrated and demonstrable truth—not a conjecture drawn from data hard to obtain or experiments difficult to repeat. Any one may convince himself of the communicability of the disease from affected to healthy trees, and any one who has the requisite apparatus, and the ability and patience to use it, may as surely convince himself of the existence and action of the exceedingly small, but not the less efficient agent in this communication. Not every one can see the mischief working organism, because human eyes unaided are far from being sharp enough for the purpose; but it is surely too late in the day to disbelieve things exist because our unaided eyes cannot discern them. The microscope reveals as many additional species of living things, and as many structural components of larger bodies, as were known to man before the invention of this marvelous instrument. So far as disease goes in animals and plants, the whole trend of scientific demonstration shows the increasing appreciation or apprehension of the importance and power of these minute organisms, and he who is disposed to cavil at the "germ theory" of disease, simply indicates by this that he is behind the times. Let him make himself acquainted with accessible literature, or much better let him, with rigid accuracy and scrupulous care, repeat the experiments that have been made, and of which the results are recorded, and no dullness of apprehension, nor prejudice of preconceived opinion can possibly prevent the belief that bacteria and their allies are real and positive disease producers. Not all the

diseases and injuries of plants and animals are parasitic in their nature; but it becomes more and more certain that all communicable ones are due to living, growing and multiplying things.

I wish, however, to be well understood in regard to pear blight. Bacteria *cause* the disease, if we speak of the immediate and active agent in the change which takes place in the affected tissues; that is, the death of the parts is directly due to the work of a single and certain species of these microscopic organisms. But if we speak of the peculiarities of the tree, which permits or favors the operation of these minute enemies, as the cause, then we all agree that the latter has not been well worked out. No one, I venture to assert, can tell why a Bartlett or a Clapp's Favorite blights, while in the same soil and under the same conditions a Duchesse d' Angouleme, a Tyson or Seckel does not. We speculate about vitality, maturity of growth, predisposition, resistance, etc.; but speculation is not demonstration. We talk, and perhaps learnedly, about the effects of temperature, high or low, electricity, thunder and lightning, drainage, soil, potash, lime, rusty iron, salt, cultivation, grass, etc., etc.; but when it is all done we must acknowledge that the basis of proof, if there is any so far furnished, is the merest empiricism, and at any time liable to overwhelming contradiction. For one, however, I have faith in science, and confidently look for answers to some of these deeper-lying questions from the physiologists and chemists, guided and aided by the critical observations of practical cultivators. It is by no means impossible that we shall yet know what the real essence of vitality and hardiness is, whether material or immaterial.

I repeat—the direct or immediate cause of the disease we call blight in the pear and apple-trees is a specific, named and described, living organism belonging among the bacteria, and which can be invariably found in the blighting tissues as surely as bees can be found in hives containing honeycomb in process of construction. Beyond this confident assertion of the fact I do not now care to go, save some account of prevention to be given further on.

I turn now to the disease called yellows of the peach-tree. After the researches upon the peach-tree blight had been publicly reported, specimens were sent me from Detroit and South Haven, Mich., from what purported to be peach-trees suffering with yellows. The disease was and is notoriously prevalent in the latter district. Three distinct lots of specimens were received, and after a careful examination of them it seemed to me that the conclusion was warrantable that the cause of the well-known contagious malady was an organism found in the affected tissues, not very unlike that of blight, in the pear. This conclusion appeared in public print, perhaps prematurely. The three lots of specimens were the only ones examined. No experiments of inoculation, etc., were tried; no living and growing trees were seen suffering with the disease. Now, nothing supporting the "bacteria theory" of the yellows has come to my knowledge; no

one has again found and identified the organism or reported similar effects. My observations are, therefore, only good for the three lots of specimens examined, and in the face of different conclusions reached by other investigators these seem to be of comparatively little value. What I now want to say, is that it is impossible for me to have an opinion as to whether bacteria have, or do not have, anything to do with this disease called yellows, but that it does seem probable that there is really more than one disease to which this name is commonly applied. If the difficulty was one known to fruit growers in my section of the country attempts would have been made before this time to solve the problem; but notwithstanding the eminent opinions recently published and widely quoted, that the disease is really due to some poverty of the soil in the region where it exists, I seriously hesitate to introduce it for the purposes of study even in our eminently fertile, prairie region—the garden of the world in this respect. While systematic inoculations have not been acceptably tried, there is far too much evidence of the distribution of the disease through contagion to pass unheeded the warning contained therein. It ought to be an offense in the eye of the law, backed by suitable penalties, for any one, in any way, ignorantly or wilfully, to keep or disseminate such a disease among his or other's trees. In the meantime, I heartily agree with the eminent secretary of the Michigan State Horticultural Society, who, in his last Report, quotes thirteen opinions covering five pages of the book, and then adds:

"Were it not for the fact our Michigan peach growers that have had most to do with this fell disease are in no mood to laugh, they certainly would audibly smile at the above array of notions concerning the yellows. It is a great pity that men that know most about the disease do not say more, and those who have tried one or two experiments would wait before making their conclusions public property. What we want is some scientific man to go into a country like Berrien County in our State, where the disease, in spite of the employment of the best knowledge concerning its prevention, has cleared out the peach interest; then let him dig until he feels he has something accurate and valuable to communicate, and until that time to hold his peace. Until some one in whom the public have confidence will do this, we shall have no satisfactory solution of the problem."

I return to the matter of pear blight simply to say that especially during the past three years careful removal of diseased parts of trees, as soon as discovered affected, has been in my hands perfectly successful as a preventive. The trees so treated have been where they can be often examined, and the plan pursued is to let no fortnight pass during the summer months without closely scrutinizing each tree, looking especially for the appearance in the bark, before indications are shown by the leaves. The best time to see such

affected bark is after a shower while the surface is wet. The varieties are: Bartlett, Duchesse d' Angouleme, Clapp's Favorite, Louise Bonne de Jersey, and Flemish Beauty. All have been more or less blighted except the Duchesse (dwarf) which seems to be almost entirely exempt. (A similar statement can be made of Tyson, grown by several parties in the neighborhood). All are to-day apparently perfectly healthy, and have made excellent growth and have borne very satisfactory crops—very large in 1882. Some of the trees have stood in grass since planted about twelve years ago, others were well cultivated until three years ago, *i. e.* during nine years, since which time they too have been in grass. All have received moderate fertilization with stable manure. No washes or other methods of doctoring have been used. With three exceptions, to be mentioned presently, blight has been removed with very little cutting because taken at or near the beginning, and experience shows that this can usually be attained by very close looking once in two weeks. We must certainly get over the old idea that blight affects a large extent of a tree in a day or night. Its development is always comparatively slow.

Among these trees, nine years planted in 1880, two Bartlett's were inoculated in six or eight of the limbs with blight bacteria, and one Louise Bonne de Jersey, naturally blighted in the top, was purposely left with the two inoculated Bartlett's without pruning. All three became badly diseased during the summer of 1880. In June, 1881, an attempt was made to save one Bartlett and the Louise Bonne by cutting away the affected parts. As a result, I submit a photograph made three weeks ago of the Bartlett. Nearly the whole top was cut away the last of June, 1881, and two or three times afterward small prunings were required. Of course, in all the prunings precautions have been taken against infection, both by the work itself and through open wounds. The latter have been painted at once. The tree photographed has not borne anything during the three last years, but bids fair to produce a crop next year. It has now plenty of fruit buds. The other Bartlett, every way similar to the one photographed at the beginning of the experiment, in July, 1880, was left to its fate and gradually became diseased throughout until May, 1883, when, being dead, it was dug out. The roots were found still alive from a little below the surface. The Louise Bonne de Jersey refused to recuperate, and it, too, was dug out last spring. Having been left too long the bark of the trunk became infected, and it seemed impossible to entirely remove the disease-producing agents. Quite possibly more vigorous cutting when first begun would have succeeded.

I am able to confirm the observation of Mr. Pieffer, of Wisconsin, that blight may be introduced through the flowers, and probably without wound of any kind.

Although it was getting late and the audience much fatigued with long sitting, the reading was listened to with close attention and appropriately applauded.

Upon motion of Mr. Minkler, Prof. W. H. Ragan, of Purdue University, Lafayette, Indiana, and Prof. J. L. Budd, of the Iowa State Agricultural College, were made honorary members.

Motion was then made to adjourn, when President Galusha said, before adjournment the matter of appointing committees on Fruit on Exhibition and on Final Resolutions should be attended to. In what manner shall it be done? The President was requested to make out these committees and report the names to-morrow morning. The Society then adjourned to meet in the Free Congregational Church.

SECOND DAY — Morning.

Session opened at 9:30 o'clock in the Free Congregational Church. Prayer was offered by Mr. S. G. Minkler.

President Galusha in the chair, said: The first thing on the programme this morning was the election of officers, but before proceeding with that he would announce the following committees:

On Fruits on Exhibition.— Arthur Bryant, Jr., of Princeton; Dr. A. G. Humphrey, of Galesburg; and H. M. Dunlap, of Savoy.

On Final Resolutions.— Hon. John M. Pearson, of Godfrey; W. T. Nelson, of Wilmington; and L. C. Francis, of Springfield.

Dr. Sanborn — I move that we proceed to the election of officers without any extended remarks on the qualifications of candidates.

Col. W. H. Fulkerson seconded the motion.

Parker Earle — I understand this to be a debatable question, and if the Society chooses to discuss it they should have the privilege. I hope the motion will not prevail.

Dr. Small — As I understand it, the motion does not restrict legitimate discussion, and it certainly is not in good taste, to put it mildly, for this Society to allow, under the guise of making a nomination, the motives and acts of the members to be assailed.

Col. W. H. Fulkerson — I don't see any need of making a Fourth of July speech, and am in favor of the motion.

Several other members, whose names the Secretary did not get, expressed themselves opposed to the motion. Upon taking the vote the President stated that he believed the motion was lost. A division being called for, resulted in a count of twenty-five for and twenty-six against the motion.

Dr. Schrœder — I propose that we go on with the discussion of Prof. Burrill's paper, read last night.

Dr. Small — It is now past ten o'clock, and I move that we proceed to the election of officers, as you have, Mr. President, already announced that to be first on the programme this morning.

Parker Earle — I think we should wait until the members are all in. There are persons in the city from different parts of the State who have not renewed their membership, and many more here who want to become members to vote.

E. A. Riehl — I think it best not to hurry this question, but wait until all are enrolled.

Dr. Small — I have no wish to interfere with that work going on there [pointing to the Treasurer who was taking in money lively for membership fees] but merely wished to object to Dr. Schrœder's proposition. I withdraw the motion.

President Galusha — The belief has just been expressed to me that the death of Father Smiley Shepard, one of the founders of this Society, has occurred since our last meeting. Can anyone tell certainly whether this is so or not? He was very old and feeble, and we have seen so little of him of late years that the exact time of his death is not known to me, or at least not remembered. It is eminently fitting that some action be taken.

Upon motion of B. G. Roots, Samuel Edwards was added to the Obituary Committee, with instructions to draft appropriate resolutions on the death of Father Shepard.

Hon. John M. Pearson called for the reading of the list of members, that we might, as he said, the better know who were entitled to vote.

The Treasurer, after reading the list, counted them over carefully, and said there were ninety-eight persons entitled to vote. The names of ladies had been listed with and were read along with the names of gentlemen members. President Galusha alluding to this, remarked that ladies would be entitled to the privilege of voting unless the Society saw fit to reverse the action taken at Kankakee a year ago.

Parker Earle asked, would not nominations for president now be in order, and being answered in the affirmative, proceeded, in a few words complimentary to the candidate, to nominate the Hon. John M. Pearson, of Godfrey, for president for the year 1884.

The nomination of Mr. Pearson was seconded by H. S. Bloom.

President Galusha — Are there any other nominations for president?

No other nominations being made, Samuel Edwards moved that the secretary be instructed to cast the ballot of the Society for Mr. Pearson for president. A rising vote was taken, and Mr. Pearson declared unanimously elected.

Mr. Dennis nominated Dr. Schrœder for vice-president.

Dr. Schrœder declared he did not want an office, and would respectfully decline the honor offered him, and nominated H. K. Vickroy, of Normal.

Mr. Vickroy's nomination was seconded by Prof. Burrill.

Parker Earle — As Dr. Schrœder declines, and there appears to be no other nomination, I move that the secretary be directed to cast the vote of the Society for Mr. Vickroy.

The vote was so cast and Mr. Vickroy declared elected vice-president for 1884.

O. W. Barnard suggested that before proceeding further with the election tellers should be appointed.

The chair then appointed Samuel Edwards, Dr. Humphrey and Parker Earle, tellers.

O. W. Barnard nominated Len. Small, of Kankakee, for secretary, whose nomination was seconded by Dr. Schrœder.

Mr. Robison — I present the name of one who has long been a member of this Society, and is known throughout the Northwest as an intelligent and enterprising horticulturalist. I nominate A. C. Hammond.

Mr. Hammond's nomination was seconded by S. G. Minkler.

Parker Earle moved that the roll be called and each member come forward and deposit his vote.

Dr. Humphrey — As a considerable number of the votes have been collected I suggest that we go on, and call this ballot an informal one.

Mr. Earle concurring in this suggestion, withdrew his motion, and Dr. Humphrey, having put his suggestion in form of a motion, it was carried.

Upon canvassing the vote the tellers announced that 104 votes were cast, of which Mr. Hammond had received 84, and Len. Small 20.

Len. Small — I move that the informal ballot be made formal, and that Mr. Hammond be declared unanimously elected secretary.

Motion carried with applause.

Dr. Schrœder — Gentlemen, I must say something for Mr. Small. It is well known that I was the mover, at Kankakee, in proposing Mr. Small for secretary. We old men must soon die, so let us encourage the young men. Mr. Small has done so well I move that the Society pass a vote of thanks to him.

Parker Earle — I second the motion, and congratulate the young man on the good judgment shown, and the good nature exhibited in offering the motion just passed.

J. M. Pearson — The committee on Final Resolutions will attend to the thanking business. We don't want all our thunder stolen.

The motion was, by a rising vote, declared by the chair unanimously carried.

Henry M. Dunlap, of Savoy, was nominated for Assistant Secretary by Prof. Burrill, and upon motion of Mr. Dennis, the Secretary was instructed to cast the ballot of the Society for Mr. Dunlap, and it was so cast.

S. G. Minkler, of Oswego, the present incumbent, was re-nominated for Treasurer by Dr. Humphrey, and by him moved that the vote of the Society be cast for Mr. Minkler, and it was so cast.

The names of the officers elected to serve the Society for the ensuing year were then read by the Secretary, as follows:

President—Hon. John M. Pearson, Godfrey.
Vice-President—H. K. Vickroy, Normal.
Secretary—A. C. Hammond, Warsaw.
Assistant Secretary—Henry M. Dunlap, Savoy.
Treasurer—S. G. Minkler, Oswego.

The selecting of a place for the next annual meeting was announced by the chair to be in order, and invitations asked for.

Prof. Burrill—I extend an invitation to the Society to hold its next annual meeting at Champaign, and shall be glad to meet you at the University. I have not consulted with our citizens, but am sure they will give you a cordial welcome.

President Galusha—It is eminently proper that we hold our next meeting at the University. It will doubtless be the means of advancing our interests, and possibly of forming a nucleus of an experimental station.

It was decided by the unanimous vote of the Society that the next annual meeting be held at Champaign.

Milo Barnard—As I have heard quite a number here express themselves in favor of holding the meeting earlier in the year, in order to bring this question before the Society for consideration, I will move that the next meeting be held the latter part of September.

Dr. Schrœder—I second that motion, gentlemen. The thermometer, in December, will go down and down in spite of all, and old men like me don't like to go from home in such cold weather; and then, too, so early as September we could have a splendid exhibition of fruits.

B. G. Roots—September is, with some of us, the busiest month of the year, and I am afraid, in consequence, the attendance would be comparatively small. I move that we make it a month later.

Mr. Barnard accepted the amendment naming October instead of September.

J. M. Robison—This question of changing the time of meet- is a serious one. Orchardists and nurserymen cannot possibly leave their business in September or October.

Hon. John M. Pearson—Heretofore this matter has been left to the Executive Board. Many things should be taken into consideration in fixing the time for the annual meeting. I believe we had better leave it to the board.

Mr. Barnard again changed his motion to accord with Mr. Pearson's suggestion, and it was left with the Executive Board to fix the time for the next annual meeting.

Parker Earle—I wish to invite the members of this Society, and all the horticulturists of the West, to meet with the Mississippi Valley Horticultural Society, at Kansas City, in January. I think it will be one of the most important horticultural meetings ever held in the country.

Prof. Forbes—I rise to extend the invitation of Prof. Hewitt to this Society to visit the University at any time it may suit your convenience, and while there I will be glad to meet you in the museum.

S. M. Slade—While invitations are in order I wish to invite members of this Society, as well as all others interested in horticulture, to the annual meeting of the Northern Illinois Horticultural Society, at Elgin, on the twenty-second, twenty-third, and twenty-fourth of January.

Prof. Burrill—I will also cordially invite you to the "Farmer's Institute," which is held annually at the Industrial University the last week in January. "Plant, Field, and Orchard Crops," is announced as the subject for consideration at the coming meeting.

Prof. Budd—Many of you have in the past attended our meetings in Iowa, and we have always been glad to see you. We meet this winter at Des Moines, on the fifteenth of January, and it will give me great pleasure to welcome all or any of you to that meeting.

President Galusha—I am very sure that many of the members of the Society wish to visit the Normal University; what action will you take?

Dr. Small—I move we accept President Hewitt's invitation and visit the University in a body. Motion carried.

B. G. Roots—The exercises to-morrow evening will be very interesting. The annual contest between the two societies will take place.

Report of Ad-Interim Committee for Central Illinois, C. N. Dennis, Hamilton, and H. K. Vickroy, Normal, was called for, and read:

AD-INTERIM REPORT.

In making this report I take up what I have seen during a very busy season which at the time I considered worthy of note. In June, hearing that E. F. Humphrey, six miles southeast of Quincy, had netted six hundred dollars from two acres of strawberries, I visited his patch, and found it on a ridge from which oak and hickory had been cleared, with timber on west, south and east, open on the north. The strawberries were of two years' growth. Crescent and Downing inter-rowed, two Crescent, one Downing, but had run together, entirely covering the ground. The first blossoms were killed by frost, so much so that two thousand boxes left over from previous year were considered sufficient for the crop, but a neighbor passing the grounds before ripening, said, "you are going to have a good crop." Sent Mr. Humphrey to examine, and he found an immense number of small berries, which, owing to favorable weather, developed in to between three and four hundred dollars per acre at from $1.50 to $2.00 per 16-quart crate. No extra labor or care given in the premises. The same party has an additional acre alongside the other to which he is giving good cultivation and confining to rows.

In October I visited Denmark, Iowa, and saw that veteran horticulturist, G. B. Brockett. I found apple trees very badly killed. And here I want to ask a few questions. Did not, perhaps, the immense crop of two years ago, followed by a very wet summer, causing a spongy growth, and a very imperfect leaf growth, which prematurely dropped, and in some cases a second growth of leaf, which necessarily was unripe, and this, with a late, warm fall, which was followed by a very severe winter, was it not what might have been expected, even with only a reasonably cold winter, that we should find many dead and dying trees during the past summer?

And again, is not this calamity possibly a blessing in disguise, if we study the circumstances thoroughly and learn how to remedy similar disasters in future?

My attention was also called to a seedling apple (probably a seedling of the Ben Davis, which it closely resembles) which itself, and several hundred others grafted from it, have passed through the late trying circumstances with no apparent injury. This tree originated near Athens, Missouri. Seed planted by one Mr. Riley, and some of the trees given to and planted by a Mr. Shocklefard, and one of these produced the apple locally known as Shocklefard's Best, or Shocklefard. This tree certainly possesses merit—a good growth, hardy, a good bearer, good size, good looking, and said to be a good keeper. I think another very important feature is its leaf, which is thick and velvety, giving promise of health and vigor. I would like to have this and other promising seedlings referred to a special committee.

Respectfully submitted,

C. N. DENNIS.

Mr. President and Gentlemen:

I am a little ashamed to acknowledge I have done very little on this committee. It is impossible for me to get away from home at the proper time. Mr. President, men should be appointed on these Ad-Interim Committees who have plenty of leisure; for instance, retired horticulturists who have made their fortunes in the business.

On August 30th, I attended the Champaign County Fair, and found a good display of apples, pears, and grapes on exhibition; also a good show of greenhouse plants and cut flowers from the greenhouses of Mr. Thos. Franks, of Champaign, and the Industrial University. I here met Dr. Lyman Hall, of Savoy, who had quite a collection of apples upon the tables. He gave me the following list of apples that have succeeded best in his neighborhood:

Winter Varieties—1st, Minkler; 2d, Rawle's Janet; 3d, Willow Twig; 4th, Little Romanite; 5th, English Russett; 6th, Ben Davis; 7th, Michael Henry Pippin; 8th, Jonathan; 9th, Gravenstein; 10th, Rome Beauty.

Fall Varieties—1st, Snow; 2d, Stanard; 3d, Maiden's Blush; 4th, Colvert; 5th, Baker's Sweet; 6th, Pound's Sweet; 7th, Fall Pearmain.

The Snow Twig blights badly. The Maiden's Blush is not a hardy tree with him. He says the orchards in his vicinity on the low or level lands are more healthy than those on the rolling lands. Dr. Lyman reports the Howell and Bartlett pears doing well with him. The Martha grape also succeeds well.

I also met Mr. S. S. Love, of Philo, Champaign Co., at the fair, and he says the Baldwin is doing remakably well with him this season, but has not done very much in previous years.

Prof. Burrill and I visited the Dunlap orchard south of Champaign. Mr. Dunlap was attending the Fair, and we did not have a chance to ask him any questions about this orchard. We found the trees heavily laden with fruit, and the trees in a good, healthy condition. The land, as many of you well know, on which this orchard is planted, is very low and flat. It has good surface drainage. The land was thrown up in ridges and the trees planted thereon. The trees are planted about twenty-five feet apart, and they now shade nearly all the ground. On the lawn at Mr. Dunlap's there are several varieties of pears growing in a blue-grass sod, among them the Tyson, which is doing well. The White Doyenne was badly cracked. We also saw some very healthy and vigorous pear trees growing, singly, in a blue-grass sod in his pasture, but did not know the varieties. These orchards are well sheltered by belts of trees, mostly soft maples. I was informed that nearly all the orchards in Champaign County, planted on low or level land, were doing very much better than those on the high and rolling ground. The trees are in a more healthy and vigorous condition, and bearing more abundantly. On the high rolling ground they were in an unhealthy condition and bearing but few apples. Will some gentleman here, tell us why this is so? We have been taught that the high and rolling lands, for orchards, were better than the low lands. Is it possible our teachers have been leading us astray? Let us wake up and look around, and, if possible, find out the cause. Are we not too apt to follow the advice of some one in whom we have great confidence, rather than solve these problems ourselves?

I think one great drawback to successful fruit culture is systematic and thorough tile draining and preparation of the land, and a careful selection of good, healthy varieties. Is there a gentleman present who can cite us to a single orchard in the State of Illinois that has received this thorough preparation and selection of trees and plants? If so, will he please tell us where.

I will cite three authorities on fruit growing in regard to tile draining orchards, and you will see how their testimony conflicts:

On page 216 of our Transactions for 1869, Dr. Hull says: "Tile draining orchards is not worth a fig. In the State of Michigan I have been in one hundred and fifty orchards in which it was resorted to, and in all of them the ditches became filled up."

On page 215 of the same volume, Mr. Pierson, of Onargo, asks Mr. Thos. Meehan the following question: "Mr. Meehan, what is your opinion of tile draining?" Mr. Meehan's answer was this: "I would not put an orchard where it required tile draining. I never found any profit from tile draining in fruit orchards."

On pages 130 and 131 of the same volume Mr. P. Barry says: "The soil which experience has shown to be best adapted to the pear on the whole (what applies to the pear orchard will apply to the apple), is a deep sandy or gravelly loam with a soft clay subsoil.

Very fine trees are found growing where the subsoil is sandy and gravelly, but the clay bottom is preferable when it can be had. The trees on it will, perhaps, not bear so soon, but they will be less liable to exhaustion from overcropping, and will endure longer. Whatever may be the quality of the soil, it must be *dry;* that is, free from stagnant moisture. Many soils are apparently dry, and are sufficiently so to produce good farm crops, but not suitable for fruit trees. In Western New York, where I reside, I think that there is not five per cent. of the land fit for fruit trees without under-draining, and the land that needs draining is far the best. Very few soils, indeed, anywhere, are suitable for fruit culture without this preparation. I recommend, therefore, *thorough drainage* for all soils for pear orchards, except when the surface is rolling and the subsoil absolutely porous of sand or gravel. One of the best pear gardens I have seen was in a *reclaimed marsh."*

I might cite you many other authorities, but these are sufficient.

Prof. Burrill and I went through the Experimental Orchard at the University and examined the trees, and I am sorry to report that its days are about numbered. Had the land on which this orchard is planted been thoroughly tile-drained, and good, healthy and vigorous trees of one or two year's growth been selected, the result would have been different, and I am sure more satisfactory.

The following trees in this orchard seem to be doing well: Shiawasse Beauty—a goood fall apple; Red Astrachan, is very satisfactory; Johnson, of Pennsylvania, has borne for a number of years. It is a bright red apple; tree of dwarfish habit. Dana Greening has borne well. Tree vigorous; a winter fruit. Downing's Favorite has done well in previous years, but no apples this season; fall apple. Higby's Sweet is a fine vigorous tree, and has borne well, and fruit of fine quality. Downing says: good to best—season December to January. English Golden Russett has generally borne every year until this; good healthy tree. Winesap has done nothing in this orchard.

I believe if our lands, both high and low, unless underlaid with sand or gravel, were thoroughly tile-drained, and a careful selection of our most hardy and best varieties of trees, that our orchards will be more fruitful and long-lived. I would prefer the lower land if it were not for the spring frosts, and I am not sure but even then they would be more profitable. We are often deceived about the higher land being the drier. I think it is more retentive of moisture, and in the early part of the season it becomes perfectly saturated, and in time of drouth it becomes baked almost as hard as a brick; and when the rains come during the hot summer months, it runs off to the low lands and is absorbed, the ground being more porous, and has not so good a chance to escape.

Respectfully submitted,

H. K. Vickroy.

Prof. Budd — Allow me to refer to the subject of last evening, entomology. Last winter our State Society offered a premium of $50 for the best and most practical essay on that subject. This premium was awarded to Hon. J. N. Dixon, of Oskaloosa, Iowa. Mr. Dixon is not an entomologist, but a plain, common-sense man. He has no codling moths, canker worms, caterpillers, tortrix, or leaf skeletonizers in his orchard, and it is a large orchard, yielding eight thousand bushels of apples this year, and this is emphatically the "off year" for the apple crop in Iowa. Forty thousand bushels were taken taken from it the year previous. There is no mystery about it. He sprinkles his trees with arsenic water just after the blossoms open. Barrels are filled with this solution, made by dissolving one pound of arsenic in two hundred gallons of water, placed upon a wagon, driven along the rows, and the solution thrown upon the trees with a force pump. This effectually destroys the insects which enter the apple by means of the blossom, and many others. The few that escape the poison he tramps out by pasturing the orchard with sheep.

Prof. Burrill — Mr. Whitney, of Franklin Grove, has used London Purple in much the same way, with good results.

Prof. Budd — Mr. Woodworth, of New York, and Mr. Cook, of Michigan, used Paris Green and London Purple, but found that both of these substances clogged the sprinkler and caused the operator much trouble. Arsenic is better and cheaper, and more easily dissolved.

Parker Earle — Mr. Moody, of New York, follows very successfully the same plan of showering with arsenic water.

Mr. Gibbs — Mr. Whitney says, pasturing with sheep is the best remedy for codling moth. They destroy many worms by picking up the fallen fruit, as well as by tramping around the trees. In one of his orchards, divided by a hedge, one portion, pastured with sheep, was almost free from moths, while the other, to which the sheep did not have access, was badly infested.

O. W. Barnard — Is there not danger of poisoning stock if allowed in the orchard after using the arsenic water?

Answer — Yes, by several voices.

Prof. Budd—Last Spring the strawberry worm was becoming troublesome on the college farm, and I sent a man to sprinkle the strawberry beds with arsenic solution, not thinking about the berries being so nearly ripe. The application was very effectual in destroying the worms. Three days after I found some children gathering and eating strawberries from one of the patches which had been sprinkled, which frightened me not a little, but no harm came of it.

Mr. Gibbs—How often should apple trees be sprinkled to secure the best results?

Prof. Budd—One or two applications of the arsenic solution is generally sufficient. Mr. Dixon did not sprinkle his trees last spring; the poison had done its work so thoroughly the previous year that he did not think it necessary. I had a barrel of Jonathans from his orchard and did not find a single worm in them. As to the sheep—the codling moth often leaves the apple before it falls to the ground, and of course, in that case escapes injury from the sheep. Mr. Dixon recommends pasturing with sheep not so much for protection against the codling moth as to get rid of another insect, which purpose is principally effected by the tramping of the ground by the sheep.

G. B. Roots—When I pasture my orchard with hogs I have very few worms; when I do not, they increase rapidly.

Prof. Burrill—About codling moths; they will certainly travel a mile or more, and orchards near towns will be more or less infested by moths coming from fruit kept in town. I cannot see how the pasturing with sheep, as in the case mentioned here, can prevent the moths crossing the hedge.

Mr. Fred. Hayden submitted the following

REPORT OF AD-INTERIM COMMITTEE FOR SOUTHERN ILLINOIS.

Gentlemen of the Illinois Horticultural Society:

Having been absent from the State, or so entirely occupied with other business as to make it impossible for me to do the duty which devolved upon me as one of the Ad-Interim Committee for Southern Illinois, I have called to my aid Mr. G. W. Endicott and Mr. Harry Wallace, of Villa Ridge, who have kindly collected such information as was possible in a short time, and I give it to you in the following notes, beginning with apples:

Mr. Harry Wallace notes the fact that at Anna the increase in planting apple orchards is ten thousand trees, plainly showing that it has been a profitable season for apples at that point. Varieties preferred—Red Astrachan, Benoni, Saps of Wine, Ben Davis, Winesap, Buckingham, Rome Beauty, May of Myers, Jonathan and American Summer Pearmain.

At Cobden there is but little increase of apple orchards. Red Astrachan, Benoni, Winesap, Saps of Wine, Ben Davis and Jonathan most in favor.

Makanda is increasing her apple orchards this season twenty-five per cent. Varieties in favor are Saps of Wine, Red Astrachan, Rome Beauty, Ben Davis and Winesap. Makanda is also increasing the acreage of peach trees—Rareripe, Old Mixon, Troth, Smock, and Stump being the leading varieties.

Cobden is increasing its peach orchards annually, with the Missouri Mammoth, Ead's August, and Smock most in favor.

But Anna leads in peach-tree planting as well as in apples, the leading varieties being Old Mixon, Ward's Late, Heath Cling, Mountain Rose, and Smock; two-thirds of the new planting being of medium or late varieties.

The favorite strawberries at Anna are the Sucker State and Crescent planted together. Twelve and one-half per cent. increase of acreage this season. The Sucker State is a favorite at Cobden also. Cobden growers say the Phelps needs farther trial, while Makanda growers say the Phelps is the best berry they have. Makanda plants largely of Wilson and Downings, as well as Phelps. Twenty-five per cent. increase of acreage this season.

Red raspberries are being more extensively planted, and are considered profitable. Brandywine, Cuthbert and Turner head the list.

At the centre of fruit-growing, Makanda, Cobden, Anna, and Villa Ridge, there is an increase of perhaps ten per cent. this season of fruit-growers, recruited from the ranks of the grain farmers mostly.

More people are turning their attention to gardening, especially at Anna. Sweet potatoes, melons, asparagus, and radishes are said to pay well. The Japan and Little Gem melons are the favorites.

Pear, grapes, cherries, plums, blackberries, and black raspberries are all considered poor paying crops at Makanda, Cobden, and Anna, while grapes pay fairly well at Villa Ridge.

In the above notes you have the condition (boiled down) of the fruit interest in the great centre of fruit-growing in Southern Illinois. Villa Ridge is dealt with in G. W. Endicott's paper, so that I need not speak of that point in these notes.

At Alton the present season has been a fairly successful one for the majority of fruit-growers. Apples were generally good on young orchards, and on old orchards in some favored localities, and the prices obtained very fair.

A very small crop of pears, more Seckels than any other variety.

Grapes, about one-fourth of a crop. The cold winter, a hail storm in June, and rot in July nearly ruined the crop.

Strawberries were fine and brought a fair price. Capt. Jacks and Crescents head the list.

Red raspberries are fairly profitable here, with Brandywine and Turner in the lead.

Respectfully submitted,

F. HAYDEN.

[From G. W. ENDICOTT.]

MR. FRED HAYDEN, *Alton, Ill.:*

Dear Sir—According to your request I herewith report such facts and information as I have been able to collect in regard to general horticulture in Southern Illinois. Not having the time or ability to make out an elaborate report, the bare facts gathered from observation and enquiry among the best fruit-growers of this part of the State must suffice for this time; and to make a report of this kind better understood, each county will be reported on separately, beginning with Pulaski, and including Union and Jackson to some extent, or the grand chain district as laid down in the horticultural classification of the State.

Pulaski County.—In a horticultural point of view, the past year has been a remarkable one, not on account of the abundance of fruit, but from the wide-spread devastations by insects and the peculiar eccentricities of the weather.

Our apple crop was entirely destroyed by the forest-tree caterpillar, both fruit and foilage being completely devoured, and the trees left in a very bad shape for next year's fruiting; in fact, many of them died outright, and what looks more discouraging is the millions of eggs now deposited for another crop the coming Spring. Very few young trees planting.

Pears seem to be on the down grade. There were no crops to speak of, and what specimens there were were more or less scabby and imperfect. The blight has almost ruined the pear orchards of this county, and no one seems to have the courage to plant any more trees. Duchess and Howell succeed better than any others here.

Peaches were only a partial crop in this county, owing to various reasons. The winter of 1882–3 was extremely changeable, with sudden cold snaps that killed a part of the buds, followed by a heavy sleet that crushed the buds to a pulp on some varieties; but with all these mishaps there would have been a fair crop, but for the cold wet weather in May; that caused many varieties to drop their fruit prematurely, and the warm wet weather at the time of ripening caused many to rot and speck, so they were unfit for market. The past Summer and Fall have been very favorable for a good growth of new

wood, and the outlook is fine for a good crop the coming year. The early varieties, Alexander, and Hale's, and all that class of peaches, will be left out in future plantings. They are so poor in quality and rot so badly, that they are not profitable. Acreage increasing rapidly, and more care given to pruning and cultivation.

Grapes were a partial failure on account of rot, but there was a fair crop marketed from the county this year, and fair prices through the season, better late than early. Crop all went to Chicago. Acreage increasing about fifteen per cent annually. The Ives is grown more than all others, but there are many other varieties grown here with fair to good success, and grape-growing seems to have come to stay.

Strawberries about one-half crop, and many of them of poor quality. The Fall of 1882 showed the finest stand of plants ever seen in this county, and many growers thought the crop of 1883 would be double that of any former year, but the severe and sudden freezing and thawing broke many of the roots, and a large part of the plants were "heaved" partially out of the ground, and were in a bad shape to withstand the severe drouth of early spring; and to cap the climax the "tarnish plant bug" appeared by millions and sucked the young fruit dry on the stems. The bug seemed to have an appetite for the larger and sweeter varieties, and by their actions showed that they would have the last berry "if it took all summer." At this date the prospect is good for an immense crop in 1884. Acreage increasing about twenty-five per cent. annually, with more Crescent Seedlings being planted than any other variety, with Wilson & Downing's next. Some of the newer kinds are coming to the front, the Sucker State in particular. All varieties have rusted more or less for the last two years, except the Crescent.

Blackberries are not cultivated in this county for market, and the same can be said of the Black Cap Raspberry. But the Red Raspberry is grown to some extent for market, and has always been a profitable crop. The Turner has been more extensively planted than all others. Acreage gradually increasing.

Cherries and Plums are not grown much here as a market crop. The Chickasaw class of plums are the only kind grown, and the Early Richmond Cherry has been more successful than any of the other fifteen or twenty varieties planted here. Not many young trees being planted.

As to vegetables, the Sweet Potato leads all others, and is looming up as a market crop. Acreage increasing each year.

Next to the sweet potato, Wax Beans are the leading vegetable, and this county can beat the State on them.

Union County.—Apples a fair to good crop, especially in the Northern part of the county, where the "caterpillar" did not reach. The early apples, with a medium crop, sold for outside prices, and gave the shippers good satisfaction; and Fall and Winter fruit sold for good round prices all through their season.

The most popular apples in this county are: For Early — Benoni, Red Astrachan and Early Harvest; for Fall — Saps of Wine and Buckingham; for Winter — Ben Davis, and Winesap. More young trees planted this Fall than for many years.

Respectfully yours,

G. W. ENDICOTT.

FREDERICK HAYDEN, ESQ., *Alton, Ill.:*

Dear Sir. — The great range of hills which cross our State at Cobden continues southwest into Missouri, and forms a sort of semi-circular shield against northwest winds, like the coast range of mountains do to San Diego, Santa Barbara, and Los Angelos counties, California.

There, it is true, the extremes are greater, from the border of the warm Southern Ocean to the greater elevation of the mountain ranges, but the conditions and consequences are similar. There the low plains and valleys produce the orange and olive, while the high hills and mountain plains produce the apple and pear in all their variety and excellence.

Here the valleys and low hills bordering on the Ohio and Mississippi produce the early fruits and vegetables for the great "Northwest," while the higher hills, which attain their maximum elevation at Makanda and Cobden, succeed fairly well with winter fruits.

It is very true that winter apples and pears are successfully grown (in exceptional) cool seasons throughout this "Andalusia" of Illinois, still their profitable production in large quantities on the warm, rich lands bordering the river, would be a reversal of the order of nature. While these border lands are admirably situated for the production and sale of all the earlier fruits and vegetables, they hasten the ripening of late ones to such an extent that they mature and perish before the restraining effect of cold weather arrives to preserve them.

There always has been, and always will be, greater sacrifices made to produce the apple (in regions exceptionally warm) than will be made for any other fruit, so manifestly is it the Prince of Fruits, and much has been accomplished throughout the entire Southern States to secure hardy varieties. But the future will probably be more fertile in devices for screening the soil and fruit from the sun, and in providing cold caves and store-houses for apples gathered in September. All early apples do well, but Red June, Astrachan and Benoni lead the way, with an Ohio Seedling known as "Early Sugar Loaf" coming in as quite equal to the latter in quality and much finer in appearance, and an annual bearer, and perfectly hardy in every respect.

Thus, though we are now shut out from the profits and pleasures of large crops of Bellflowers, Pippens, Spitzenbergs, and Golden Russets, we can have our Fall Wine, Winesap, Fink, and "Celes-

tial Sparks," as Dr. Warder called our Spark's Late, with Grime's Golden, Smith's Cider, and Pryor's Red to enliven our winter, while the Virginia May comes in early to enable us to cheer our northern neighbors and to reap that golden reward which we are denied in the autumnal months.

It will, perhaps, strike the majority of your readers that great expense cannot be incurred to secure the success of fruits which can be produced more readily in other places, where freights are not very great. Still it is to be noted that in twenty-eight years we have had no failure in consequence of frost, which can be said of few other places, and which is an important factor in the ultimate result.

We now we sack our grapes, train them under canopies of leaves, shelter them on walls or projecting eaves, may we not mulch our apple tree roots, train them low, and canopy their vine-like branches?

The weather department will not reach its maximum of usefulness till it ceases to predict, and labors to direct atmospheric conditions. May they not aid us?

Respectfully,

JAS. H. CRAIN.

Villa Ridge, Dec. 8th, 1883.

Friend Hayden, *Manitou, Col.:*

Dear Friend—Mr. Wallace submitted a few questions on grapes from you, with the request that I send them on to you at once. Of course you understand anything I may say has reference to our own section, Villa Ridge. I have not time to look over my writing as I am writing at the store, and am continually interrupted, but hope you may guess at my conclusions at least, and cull such information as you may need on this subject from this locality.

LIST OF GRAPES PROFITABLE FOR MARKET.

1st. Ives is the standard, and without extra care have been averaging a net profit of one hundred and fifty dollars per acre, for the last ten years.

2d. Next in point of profit I would put Champion. Ripens one week before Ives, is smaller in bunch and berry, produces one-half to two-thirds as much per acre in fruit, rots no more than Ives, and is about equally profitable.

3d. Perkins. Will not rot any more than Ives, is a little later, sweeter in flavor, and will suit the taste of ordinary buyers better; have not fully tested it as to productiveness. Think about two-thirds as prolific as Ives; will, I think, be quite profitable.

4th. Cottage. This I have had in bearing but one year. During the last season, which was one of the worst we ever had in this locality for rot and mildew, it was the only one in my trial vineyard of over sixty varieties perfectly healthy in *leaf* and *berry*. Is a very rank grower, and ripens immediately after Ives. The only fault (if

it proves a fault) that I have to find with it is this, its first year in bearing, is, that it did not set as much fruit in proportion to its wood as I would like to have seen.

This is all the varieties I can recommend for market in this locality, excepting, perhaps, Goethe Rogers No. 1, which is a profitable late grape here, if the fruit is enclosed in paper sacks. If not sacked will rot badly. All the newer varieties are proving too tender to stand our climate.

ASPECT OF VINEYARD.

Best is Eastern exposure, Northeast, Southeast, South, West, and, last of all, Southwest; these of value in the order in which they are named. The sooner the dew is off the vineyard in the morning, and the less our vineyards are exposed to the excessive heat of our Southwest sun the better.

QUALITY OF SOIL.

Our soil is a clay, sandy loam. I have had no experience in any other, but as far as my observation goes, I believe it to be the very best strictly standard.

TRAINING AND PRUNING.

I have practiced in my experimental vineyard nearly every kind of training, and after trying all methods would give the preference to the mode introduced by Dr. Hull, of Alton, spiral training around a single stake 5½ or 6 feet above the ground, and spur pruning. There are other modes of training which have their advantages, and foremost among these is that of our enthusiastic friend, Geo. W. Endicott, of one wire on top of stakes six feet from the ground. After the vines have attained maturity they are fruited only on the wire. This admits of horse culture both ways during the early part of the summer, and brings the bearing part of the vine where it is fully exposed to sun and air. Friend Endicott (as you know) had the finest show of grapes ever seen in this section trained in this way. From my own experience I think he will find this system not so good the second year bearing. Still it has many advantages, and may prove the best after further trial. As to pruning, spur pruning is the only one practiced here, and I think the only feasible one.

Yours very truly,

VILLA RIDGE, ILL., Dec. 12, 1883. E. J. AYRES.

SECOND DAY — Afternoon.

Called to order at 1:50 P. M. by Vice-President, Milo Barnard.

Secretary — Mr. President: The Society has passed a resolution to visit Normal University in a body, and as there is a general desire by the members to inspect that institution, and a large number who are going home in the morning are particularly anxious to do so this afternoon, I move that we adjourn for that purpose.

Samuel Edwards, Dr. Sanborn, and several others, expressed themselves unfavorable to adjourning the Society, on account of the great amount of business before it, and the motion was withdrawn.

Samuel Edwards — I think we can spend a short time very profitably in further discussing the subject before us yesterday — the kind of land on which to plant an orchard. From the evidence of many members given here, it would appear that orchards planted on low lands were doing much better than on high lands. Our horticultural fathers taught us that high, rolling land was the best location for an orchard, but the facts brought out here do not sustain that theory. I planted my first orchard on flat land, the second on higher and dryer land. The first has been the most productive. I am of the opinion that on these dry locations trees suffer from our severe drouths, which unfit them for enduring the severity of our winters.

Prof. Budd — As I said yesterday, I consider this more a matter of condition of soil than one of elevation. We have tracts of land called Loes formation, that are very favorable for tree growth. On this kind of soil, varieties of the grade of hardiness of Baldwin, Jonathan, and Wagener escaped injury last winter, while on river bottoms they were killed.

J. M. Robison — The condition of soil goes very largely with the elevation. In the southern part of the State it is unprofitable to plant on the narrow bottoms, but on the prairie the difference in elevation is slight, and we find the most favorable conditions of soil on the flat lands.

Parker Earle — Mr. Robison, would you prefer the high land or the low, provided the conditions of soil are the same?

J. M. Robison — The high land.

Parker Earle — This is not a condition of elevation at all, but of something else. I don't like to hear this talk; we really don't mean to say lands are better for an orchard because they are lower. The low lands are always colder than the high lands or ridges. I have seen a location in Michigan where peach buds were all killed, and near by, on a location twenty feet higher, they were uninjured. Let me call attention to another feature. Action of fungi are so much worse on low than on high ground; and then we must not forget that all this preference for low lands has come up since the great drouth of 1881, followed by a cold winter — circumstances that may never occur again.

Dr. Schroeder — A farmer may not have the best location for an orchard on his farm; he must then choose such varieties as are best adapted to his soil and location.

Prof. Budd — When visiting the "King's Pomological Institute," at Proskau, in North Silesia, I found it in charge of the veteran horticulturalist, Dr. Stole, 80 years old. If I had asked him for a list of popular varieties, he would have replied: "On such a soil we plant such a variety, on such a stock." These gardens are situated north of the fiftieth parallel of latitude, on the edge of the great steppes; and one will see at a glance, as he wanders over the ground, that the varieties of fruits of all kinds which succeed here are not those of England, France, and Belgium, where our fruits mainly come from. Take the Duchesse as a representative of one race, and the Rambo of the other, and we find the leaf of the former has four rows of palisade cells and the latter but two, proving how much better prepared the Duchesse class is to endure the variable summer and winter climates of this great plain of Europe, as well as that of our own section.

P. P. Miller — I think the selection of varieties has much to do with the fruitfulness of our orchards. In my orchard Snow, Ben Davis, Bellflower and Domine have been fairly productive. My man lately told me that my soil was too rich to raise apples; but I have one tree, the roots of which run under a manure pile, and it is abundantly fruitful; contradicting emphatically his theory.

O. C. Gibbs — Will not tile draining fit almost any land for an orchard?

J. M. Robison — No. We occasionally find a tenacious clay soil that cannot be drained unless the drains are very close together.

Benj. Buckman — I have thoroughly drained with tile a barnyard, and planted to orchard, which is doing well. I would like to ask of some one who has had longer experience, if the roots of the trees will not enter and choke the tile?

J. M. Robison — I drained an orchard with tile twenty years ago. I found the roots would run all around the tile and cover the joints, but never enter them and live. The roots die that enter the tile, so the tile never becomes choked.

T. McWhorter — I am convinced that our orchards suffer more for want of water than from too much of it.

J. B. Spaulding — I have taken a great deal of interest in this discussion; have also had considerable experience in orchard planting and management. Fifteen years ago I tile drained eighty acres in one orchard, putting in the tile twenty feet apart, and I have been well satisfied with the results. On my grounds the depressions always give the poorest trees. They are small and stunted and produce the poorest fruit.

L. R. Bancroft — I wish to inquire if sprinkling the trees with arsenic water will kill the Plum Curculio?

Prof. Budd — Mr. Dixon thinks he can control the Curculio by this process in connection with pasturing with hogs.

A. C. Hammond — Will Prof. Budd give the process of dissolving the arsenic.

Prof. Budd — It is very simple. He boils the white arsenic in a sorghum pan, one pound in twenty-five or fifty gallons of water, one or two hours, until it is thoroughly dissolved; then dilutes until two hundred gallons of water represents one pound of arsenic.

REPORT OF AUDITING COMMITTEE.

Mr. President:

The Committee who were appointed to settle with the Treasurer of this Society, beg leave to make the following report, viz: Have examined the books and vouchers and find them correct, also find a balance in Treasurer's hands of $830.19. We also recommend that there be an order drawn in favor of the Treasurer for $38.56 for his commission on $1,849.76, and $1.86 paid for postage on drafts.

All of which is respectfully submitted.

W. T. Nelson,
S. M. Slade,
H. K. Vickroy,
Committee.

On motion the report was accepted and approved.

Milo Barnard — Mr. Bryant is now present and I suggest that we have his Ad-Interim report.

Mr. A. Bryant, Jr., of Princeton, then proceeded to read his report as follows:

REPORT OF AD-INTERIM COMMITTEE FOR NORTHERN ILLINOIS.

On account of the unfavorable seasons for the past two years, and the serious damage from the last winter that the orchards and most of the small fruits received in this district, and also through the whole northwest, your committee were for sometime undecided what to do in regard to making a report. We finally concluded that we would spend a little time in the examination of orchards in different localities, and see if any facts could be gathered.

Early in September your committee visited several places in Bureau and Henry Counties, and at other times were in Kankakee and LaSalle. Mr. O. W. Barnard will report in detail on the several points that we visited together. What little I have to say in this report will be of a general character, only remarking that my time has been so fully occupied with other matters that I have not given it the attention that its merits required.

As is well known, nearly all of the orchards through the northwest are in a serious decline. In some places the trees are nearly all gone, and in others some varieties seem quite healthy, and other trees partially or wholly dead. In our visits, the orchards that we found located on high dry land, somewhat sheltered, and well drained naturally, were looking much the best. The trees generally looked more vigorous, had more fruit on them than those on rich level prairie land. From this we concluded that the cold and wet affected

the growth of the trees more early in the season on the level land than it did on the dry clay soil; and that the rains and warm weather of late autumn would cause a greater activity in the trees on the level rich land, that had made but a slight growth in the first part of the season, than it would on those that made a better growth early in the season, and had, to a certain extent, matured their wood. My own experience would indicate that a warm, well-drained soil is favorable to a vigorous growth early in the season — that a cold damp soil is not so. That with a vigorous growth *early* in the season there is not the liability of the trees and plants making so late a growth in the latter part of the season, even when circumstances are favorable for such growth, as when the growth has been poor and checked by wet soil and unfavorable surroundings.

Should these conclusions be correct, a partial remedy might be found in more thorough drainage — in inducing an early, free growth, and, perhaps, by more thorough cultivation, protecting the trees from the extreme changes of heat and drouth to which they are often subjected.

As far as we visited the orchards, the average crop of apples was light. In some cases Ben Davis was doing very well. Probably one-half of the winter apples in this portion of the district this year were of this variety.

Nearly all of the trees of Snow Apple that we saw were unusually vigorous and healthy, many of them with good crops of fruit on them. This we do not understand, as in the nursery we have usually found the Snow to show the effects of cold as soon as almost any variety. In two or three instances we heard of orchards that were well laden with fruit, which were represented to be in warm sheltered locations, and were not affected by the cold north and east winds of Spring. Probably, on account of their location, the bloom was too far advanced to be affected by the cold storms that are supposed to have blasted the most of our apple crop.

This year has been a very favorable one for the development of insect life in many forms. The aphis on the apple, particularly, has been more abundant than for several years. Some fifteen or twenty years ago we recollect that they were very troublesome on our nursery trees, seriously checking the growth. With us they have been very plenty this year, in some cases covering entire rows for twenty rods in length. Other plants have suffered very much from the same pest; in one case, one-third of an acre of turnips were all literally covered with them, root and tops. The canker worm and bark louse, which were so destructive a few years ago, seem to have almost entirely disappeared. The codlin moth was not as abundant in proportion to the quantity of fruit grown, giving us a larger portion of perfect fruit than for several years past. Caterpillars of different varieties were very abundant, also the leaf roller, which in many orchards has been a serious check to the growth of trees. We

have found no very effectual method of destroying these insects except by hand-picking, which is too slow. Should they be as prevalent another year as this season, shall try to contrive some way to diminish their numbers.

The small-fruit crop was a light one as far as we visited. Where not hurt by the frosts in May, and the vines were in healthy condition, there was a fine crop of well-matured Concord grapes. This season the wood of Concord in this vicinity is stronger and better ripened than for the last three years. We found some vines of Elvira that had a good crop of well-matured fruit on them. We think, however, that this will be exceptional with this variety, as it will require a longer season to ripen than we usually have in this district.

We visited several plantations of Snyder blackberry. All had a light crop of fruit, not nearly as large as was expected when they bloomed in the Spring. The different localities and soils seemed to be affected about alike. Usually there was a light growth of cane, with not very well matured wood. The reverse seems to be true this season, so that we hope for a better report another year.

Strawberries were nearly a failure, owing to the frosts in April and May. Some varieties bore fair crops in special localities, apparently more owing to the special condition of plants and bloom when the frosts occurred than to any other cause. One party thought he had saved his crop by leaving the covering on his plants late in the Spring; another thought a similar treatment had been a disadvantage, as he uncovered his just before a freeze.

The latter part of November I visited the grounds of Messrs. Douglas & Sons, of Waukegan. They have their usual heavy stock of small evergreens and forest trees, though the supply of transplanted trees is not as large as it has been heretofore. Among other fine things on their grounds was a Norway spruce hedge; that was the finest I have seen anywhere. Also fine specimens of the Douglas and Menzies spruce. They have originated some choice varieties of evergreens, that will make their mark in the near future if we are not mistaken. Among them are a dwarf Arborvitæ (Little Gem) a pyramidal and golden Arborvitæ, and a trailing golden Juniper; all promising to be especially valuable in cemetery planting.

The Messrs. Douglas are preparing to plant a section of land to forest trees of different varieties in Dakota, on the Northern Pacific Railroad. These gentlemen have done much to prove that timber planting on a large scale can be a success and be made profitable, and we wish them the best of success in their new venture in the northwest. The planting of forest trees in Northern Illinois seems at present to be almost at a standstill, being confined to small shelter belts and screens. We think that there will be a change in the near future; that more of our prairie farmers will see the necessity and convenience of shelter and useful timber on their farms close at home.

Respectfully submitted,

A. BRYANT, Jr.

Hon. S. H. West — In the paper just read Mr. Bryant speaks of protection by shelter belts. I would like to ask him on which side were the orchards protected?

A. Bryant — On different sides. One of those referred to is protected on the north and east, and one on the north and west.

Hon. S. H. West — I was induced by the teachings of this Society to plant shelter belts, and my own experience has taught me that on the south and west is where they should be planted; and that orchards open to the north and east are more productive than if protected on those sides.

S. M. Slade — This experience corroborates the case I referred to yesterday. This orchard, forty or fifty years planted, is the only one which can be called successful in my neighborhood, and is protected on the south and west.

Prof. Budd — In connection with this subject of planting evergreens for protection belts I will call your attention to a very valuable conifer — the Riga Pine *(Pinus Sylrestris;* var. *Rigœnsis).* In most countries of Europe there is, I think, a law imposing heavy penalties for planting the common Scotch pine, or as it is there called, the Alsace pine, because of the great superiority of this variety of the same species. It should be known that Mr. Douglas, of Waukegan, is growing this valuable pine extensively.

S. G. Minkler — Evergreens for belts and hedges are frequently planted too near together. I planted a spruce hedge three and a half feet apart, and find that it is too close, and that it must be kept cut back.

T. McWhorter — I can corroborate that statement, that it will not do to crowd the plants too much. Four feet is about the proper distance. If planted too close the life of the plant is endangered. Properly clipped they make a beautiful hedge.

Samuel Edwards — After consulting Dr. Warder and following his advice, I planted eighty rods of hedge, putting the trees four feet apart.

Hon. S. H. West — Can these evergreen hedges be made to turn cattle, or are they only for ornament and wind-brakes.

Samuel Edwards — Mine was planted for a fence, but it is also very beautiful and ornamental.

Dr. Schrœder — When lately in Germany we found planted along the lines of the railroads evergreen hedges, which were found to be the best known wind and snow brakes. We ought to induce our railroads to try it. The Riga pine is named from the Riga mountains.

A telegram was here handed to President Galusha, who proceeded to read a message from the Wisconsin State Horticultural Society, now in session at Green Bay, Wisconsin, expressing the fraternal greetings and compliments of that Society, and giving information of a large attendance, an interesting meeting, and a fine display of fruits.

It was moved and carried that this Society return the greeting, which was promptly done in a hearty message.

Report of Committee on Grapes and Grape Culture being called for, E. A. Riehl, of Alton, proceeded to read.

GRAPES.

BY A. E. REIHL, ALTON.

With us the crop was very light, ranging from nothing to about a third of a crop. Various causes conspired to bring about such a result. The Spring was cold and backward, so that the grape buds pushed slowly, and gave the steel-blue beetle a fine chance to put in his work, which it improved to the full extent of its ability. Hail also did much damage in some vineyards, but the greatest damage was done by rot, which commenced early and continued until the grapes were ripe — that is, what was left of them.

As to varieties, I cannot say a great deal, because all the newer ones of which I expected to have a good show on vines grafted in 1882 did not fruit as expected. From what little fruit that did set, and the appearance and growth of the vines my judgment would be about as follows:

Concord — Rotted badly, and I will plant no more of it — and if it continues to behave in the future as it has for the last few years, I will graft it over with something more reliable.

Elvira — A nice grape, where it does well, but with me it never has done well. It sets plenty of fruit, but the branches were so compact that many of the berries crack from crowding, and the berries have invariably commenced rotting on the surface at about the time it ripens.

Noah — Gave me more fruit than any other white grape, and I would not hesitate to recommend it for our section as a good reliable white grape.

Worden — As in the past, was ripe earlier, is larger and much better in quality than the Concord, which it resembles in growth and fruit, and I can recommend it with confidence to all who can succeed with the Concord. It is so very much better than the Concord in size and quality that it should take the place of Concord entirely.

Missouri Riesling — It is a pity this grape was so named, for I believe it has come to stay. The name is too long, and it is not a seedling of the European Riesling as supposed by its originator, but the Taylor. However, as it has been pretty widely disseminated under that name it is impossible to change it, only we can shorten it by dropping a part of the too long name, and call it simply Riesling.

It is a strong, healthy grower, abundant bearer, bunch and berry about size of Clinton, white, good for the table or wine.

Vergennes — A strong, healthy grower, set some nice fruit on last year grafts, bunch and berry large, Catawba color, skin tough, and will make a good shipping grape, quality excellent, entirely free from foxiness.

Ey. Victor — The hardiest and healthiest vine I have on the place, keeping its foliage green until killed by hard freezing weather, and ripening its wood up to the very tips, a strong grower and abundant bearer, bunches small and compact, much resembling Clinton in appearance, but there the resemblance ends. It ripens with the earliest, and is superior to all others ripening as early as it does, and notwithstanding it ripens so early it will hang on bunch and vine in good condition after all the others are gone. This is without doubt one of the best black grapes we have, and I unhesitatingly recommend it for general planting.

Pocklington — Set a little fruit on last year's grafts, but did not come up to recommendations as to earliness or size, and I strongly suspect that those fine bunches that were exhibited by its disseminators were girdled to attain the earliness and size claimed for it. In quality I found it very good. In growth and healthfulness of leaf and wood it is exactly like Concord. By another season I can give a better opinion of it and many other new varieties that I expect to fruit.

Mr. Rommel, of Morrison, Mo., kindly sent me the following report:

"Our grape crop was quite satisfactory with most of the varieties. Elvira was all that could be wished. Nortons did well. Concord and Ives below an average. Martha, a light crop. Gœthe, a very light crop — winter-killed. Herbemont was winter-killed. Amber, a fair crop. Pearl, a very fine crop. Beauty, a fine crop, but was

affected by rot. Transparent was very fine, but not very productive nor fit for market, the bunches being small, but making a wine of high quality. Wilding gave a fair crop, but it, too, is no market grape, bunches are loose and skin very tender; only good for wine. Montefiore gave a good crop of fine grapes, bunches about the size of Ives, but of much better quality, very promising for the production of fine dark wine. Etta did not set as good a crop as in former years and ripened unevenly. It greatly resembles Elvira, only larger in berry and much better in quality. It is late and not to be recommended farther north. Faith did well. It requires age and long pruning to make it productive. Bunches fair, berry small, excellent in quality, exceedingly early, and on that account much injured by birds and grape-eating animals. Missouri Riesling is a late grape that I like. It is productive, healthy, and of very good quality. Brighton was fine, but generally it fails; not reliable with us. Noah was good, but is not so generally. Neosho had a heavy crop; only a wine grape. White and Black Hermann were both fine this season, and matured their crops, which they do not always do. Bacchus, so much like Clinton that it can hardly be distinguished from it. Lady Washington and Highland were winter-killed, and had but little fruit. It may be said that all of Ricket's hybrids are worthless with us. Cottage did finely. It is a fine black grape, small, compact bunch, productive and reliable, better in quality than Concord; fine for market. Moore's Early; I can see nothing in this to recommend it in our section. Some seedlings that I have I believe will become valuable, but they will need a more extended trial."

Mr. Adolph Engleman, of Shiloh, St. Clair County, Ill., reported as follows:

"With me the past season has also been a very unfavorable one for most varieties of grapes. Great damage was done in December, 1882. On the 6th of that month the weather was damp, and at 5 P. M., when a snow storm set in from the Northwest, the thermometer stood at 32° F.; at sunrise the next day it stood at 8°. Such a sudden change from mild damp weather will always do damage. In this instance it killed two-thirds of the buds of all hybrid grapes, also Herbemont, Cunningham, and others that were not well protected. When Spring opened there was still a fair prospect for most varieties of hardy grapes, and such as had been well protected during the winter, and they set a sufficiency of well sized forms. On the morning of the 22d of May there was a heavy frost, and again on the 23d. It was disastrous; most of the fruit trees were in bloom, and the Taylor and Clinton had just commenced to bloom.

"The frosts of May 22d and 23d were very erratic. My brother's vineyard, which is a half mile south and fifty feet lower than mine, was not perceptibly injured. There was also but little damage in the lower portions of the vineyard southeast of my sister's

house, but on the more elevated vineyard the damage was very great throughout, even to its highest point, although the greatest damage was done in the lower portions, where Elvira, Concord, and others had all their fruit killed. I have some Taylor that have been kept in grass as an experiment; these suffered most, as all their forms and most of the young foilage was frosted. In the other portions of the vineyard the damage amounted to about one-fifth of the promised crop of the more hardy varieties, whilst such of the tender varieties as had winter protection had about half of their forms killed.

"May was quite dry, but on the 4th of June rainy weather set in, which continued with but short interruption to the latter part of August. Mildew soon made its appearance on the leaves of those varieties most liable to it. Catawba, Iowa, Meade, Marytawny and Creveling suffered most, and did not ripen their fruit, and made but a poor growth of wood. I can hardly make up my mind to again give winter protection to the hybrids and such tender varieties as Herbemont, Cunningham and Rulander, when, in spite of the labor bestowed, they will bring so little return as they did the two past seasons.

"The Elvira and Noah suffered less from mildrew; Concord and Lady showed the effect of mildew somewhat, but not to such an extent as to prevent their ripening their fruit well.

"Norton, Cynthiana, Cottage, Ives and Mason were free from mildew. In June, the usual concomitant of wet weather and mildew, the grape rot made its appearance and destroyed about one-half of the Concord, one-third of the Cottage, and one-fourth of the Taylor and Herbermont, most of the Massasoit, and a few of the Noah. Cynthiana, Norton, Elvira, Mason and Ives suffered least. About one-tenth of my Elvira did not ripen, owing to loss of foilage by mildew, and partly on account of overbearing. The other nine-tenths had a heavy crop of fine healthy fruit.

"The Mason, with its large berries and medium sized bunches, proved quite healthy in foilage and fruit. They ripened within a week of the Lady, August 18th, and again proved of good quality. They are quite sweet when still of a green color. The vine given me by Mr. Mason has now fruited with me for three years, but never set more fruit than my Lady. Next year I will have a dozen Mason vines in full bearing and will be better able to speak knowingly of them.

"Although the Noah lost some berries by rot, it ripened a large crop of very handsome bunches, and made abundance of wood for a future crop. The only fault I find with it is that its ripe berries drop too readily from the stems."

Mr. J. Balsizer, of Highland, Ill., made the following report:

"With me the grape crop was a failure this season, owing to the frost we had on May 2d, which killed the young shoots as far

back as they had forms on. I cut off the frozen part of them, but it would have been better if I had broken off the whole shoot, for then the secondary buds would have sprouted, and would have produced at least a small crop. This was the case with some of the Elvira and Noah, which were the only grapes we got. My young vineyard (only a small one, the old one having been grubbed up two years ago) is protected on the north side by timber. This, preventing a free circulation of air, probably was the cause of so much damage by the frost, for I know of other vineyards at a distance from the timber, where the winds could play freely, which remained uninjured, or where the damage was small, but notwithstanding that, they did not fare much better, for being planted mostly with Concord the rot destroyed nearly the whole crop. In some vineyards the loss was not quite so severe; the most favored ones had about half a crop. The varieties which proved best, generally, were the Elvira, Perkins, Ives, Norton, and Cynthiana. I also have the Noah, and have great hopes for it."

I have no doubt Mr. Balsizer is quite correct in ascribing the damage by frost to his vineyard to the timber, which prevented a free circulation of air. In Mr. Englemann's case the damage can be traced to the same and no other cause. The vineyard that he says suffered so badly is on quite elevated ground and has timber on three sides of it. The other, though on lower ground, is more exposed to a free current of air. I have for years been perfectly satisfied, from my own observation, that timber belts are no protection to fruit, but the reverse.

These reports are certainly not very encouraging for grape growing, and the question may be asked, will grape growing pay? I think it will. There is no crop grown, whether fruit, grain, grass, or vegetables, but what is subject to seasons of failure. We have had some wet, unfavorable seasons for grape growing, but I look for a change, and dryer seasons will give us paying crops again. In seasons that are not too wet the grape is as sure a crop as the apple, and none are more profitable.

I have no doubt we will have too look to new varieties to meet with the best success possible. The Concord, which has been the grape for the million, can no longer be relied upon. In our section it has, from some cause, become subject too much to mildew and rot, and we must look to some new and more vigorous blood; not that I expect to find a grape that will resist disease forever, but for at least a series of years, as has the Concord. By the time the newer ones fail there will be other seedlings grown to take their places.

E. C. Hathaway, of Ottawa, member of the same committee, being absent, the Secretary, who had received his report, inquired if it was the wish of the Society to have it read. It was moved by

Parker Earle, and carried, that the report of absent members be not read on account of scarcity of time, but that they appear in proper place in the published transactions.

GRAPES AND GRAPE CULTURE.

BY E. C. HATHAWAY.

Mr. President and Members of the Illinois State Horticultural Society:

Having been requested to report on Grapes and Grape Culture in my district, I shall do so, but briefly:

The excessive cold of last winter was very destructive to vineyards in the northern part of the State, so much so that vines of the more tender sorts were generally killed to the ground, even where they were quite well protected. Concords suffered severely, many of the vines of which were killed, and in some instances were so badly used up they never started again from the roots, which they usually do when the top is injured. This condition of things, of course, clouded the hopes of vineyardists who were looking expectantly to the coming season for a profitable crop to partially repay the almost complete loss, by rot, of the crop of the previous year. Among the Concords that had received no protection, a portion of the buds swelled under the influence of the warm days of the coming Spring, but as the promise was about to develope into the first steps toward fruition "there comes a frost, a biting frost, which nips its shoot and then it falls," and with it goes down the hopes of the growers of a large part of the Northwest for a good crop.

May and June, in 1883, will long be remembered as the *black* months by the fruit growers of the northern part of this State, as well as many other states in the same latitude. These unusual frosts were not only intensely severe upon grapes, but nearly all other fruits suffered as well. In protected situations some vines escaped the frost, and such produced fine fruit, which brought large prices in market.

No rot appeared the past season, neither were insects as plentiful as usual; this last condition of things I attribute to the prevailing low temperature of the season as well as the unusual amount of moisture, either falling as rain or held suspended in the atmosphere.

As yet I have no disposition to exchange the comparatively older varieties, which have proved successful in the past, for those of more recent introduction. Many of the newer ones have qualities to strongly recommend them, but, it must be remembered, the grape is quite as capricious as other fruits, therefore it is wise to "go slow" and feel our way by testing carefully a few of each, and adopting those which prove themselves, in all respects, a little better than any

we have got. That a variety is doing finely in a locality contiguous to our own, and the soil of which is apparently similar, is not positive evidence that it will do equally well with us. As an evidence of this fact, I have no variety of grapes that uniformly is as healthy, productive or profitable as the Hartford Prolific. With me it *never* drops its fruit, and it *never* rots, while a half mile away, on nearly the same soil, the berries drop from the cluster ere it fully ripens.

Many of the newer varieties have too thin leaves; these leaves have not sufficient pupescence on their under side, that is, they are *glabrous*, which makes them too susceptible to the attacks of the "leaf-hopper," *(Erythroneura vitis)*, which, in this locality, is one of the worst pests the grape-grower has to deal with; only by persistent effort can it be kept in check, and such effort as it is not likely that but few growers will put forth.

Prentiss and Pocklington have not, thus far, fulfilled the expectations of the majority of those who have fruited them in this locality; perhaps they have not yet "struck" the soil, etc., which is congenial to them. It was quite a long time before we knew what soil to choose for the "Lady." I condemned it upon the rich, friable, river-bottom soils, but on the clay bluffs or heavy prairie soil it "does itself proud," and is a grand variety. Roger's Hybrid No. 4, *(Wilder)*, comes the nearest to the foreign varieties *(vinifera)* that can be successfully grown out of doors in this latitude.

It is extremely productive and quite as hardy as Catawba and many other of our full-blooded Labruscas; but like all other varieties of its class, a different method must be practiced in its annual pruning from that of our native Labruscas.

All of the hybrids, descended from the viniferas, should be pruned to *short spurs on long arms of older wood;* while the Labruscas, in profitable culture, should be pruned with the young canes as long as from three to five feet, cutting out the old wood and getting the cane from as near the base or collar of the vine as possible. The Fuller system of training canes of young wood upright from a section of spurs on a horizontal arm of old wood, does very well for the amateur with a half dozen vines, and also looks pretty — either where well done in the vineyard or on paper; but the grower who follows out any such plan, and sells his grapes at from two to four cents per pound, will, in my opinion, from a financial point of view, "*get left.*" An exception to his, however, might be made in the hybrids of the vinifera class; yet they will do better if pruned as before mentioned with short spurs on older wood.

I desire to add my testimony against Summer pruning; with me "it don't pay," and I am inclined to think that it is an injury to the fruit, and, perhaps, detrimental to the vine. Carry the young growth on wires above the fruit, making a canopy to shed the rain and dew. *It will prevent rot.*

Animated discussion followed the reading of Mr. Riehl's report.

Dr. Schrœder — Did you find Phyloxera in any of these vineyards?

E. A. Riehl — I did not examine them critically, but have no doubt they were there.

Prof. Budd — What do you mean by rot? I know what it is in Michigan, and have received many inquiries about it in Iowa, but I do not think we have it in our State. We often find a hard patch on our grapes, but it is caused by fungus, or the sting of a thrips.

E. A. Riehl — We have the rot, and no mistake. First a white spot appears, which spreads rapidly, and if the weather is warm it soon does its work of destruction. If we plant seed of any kind in warm wet weather, it will germinate rapidly. So with the grape rot, climatic conditions have much to do with it. Vineyards should be located where the sun will strike the vines in the morning. A northern exposure will not do.

D. B. Wier — I think Mr. Riehl is on the right track. I have spent two seasons in Arkansas, and find that on the low land the humid atmosphere causes all the grapes and peaches to rot. On the high lands they are but little affected.

Dr. Schrœder — Many years ago I planted a Catawba vineyard, and the fourth year the grapes began to rot. I tried sulphur but it did no good. I tried mulching, thorough cultivation and everything else I would hear or think of, but still the grapes rotted. Is it caused by bactarie, or is it a disease of the wood or roots? I hope Prof. Burrill will dig to the bottom of this subject.

Prof. Burrill — The grape is subject to two rots — the brown and the black. What Dr. Engleman calls brown rot is what I described last night. The black rot is not so common but is very destructive.

Question — Is not this rot a forerunner of Phyloxera?

Prof. Burrill — I do not think there is any relation between them. They are dreading this disease in Europe, and there is but little doubt of its reaching them soon.

A voice — Describe the rot.

Prof. Burrill — When the berry is about half grown a brown spot appears, and spreads rapidly. Soon the berry shrivels and sticks to the vine. The spores remain on the shriveled fruit all winter, and in the spring will take effect on the young fruit. I have seen vineyards that have never been affected, the rot producing influence not having reached them.

E. A. Riehl — The rot I referred to is what the Professor calls the brown rot. If these spores have moisture enough they germinate, otherwise they die. Hence the prevalence of rot in wet weather. Where the shape of the ground will permit I prefer to have my vineyard rows run north and south. The idea that Norton and Cynthiana do not rot is a mistaken one. I have had thirty years experience with grape-growing and know whereof I speak.

President Galusha — Are grapes less liable to rot on sandy than on clay soils?

S. M. Slade — I have a vineyard on sandy soil that has suffered little from winter-killing or rot. I know of a vineyard trained on a single wire that has produced very fine grapes. This plan gives a free circulation of air, permits the sun to dry the leaves early in the morning, and gives the fruit the necessary shade.

Prof. Burrill — Has any one present tried the experiment of drawing paper bags over the bunches? I think it can be made profitable.

Parker Earle — I wish to emphasize the remarks of Prof. Burrill in relation to bagging. It protects from rot, birds, and insects. It costs about half a cent a pound, but increases the market value of the fruit many times that amount. The bag must be put on while the grapes are very young — as soon as there is anything to tie to.

J. B. Miller — I came here to learn. One tells us to train low, another to put the vines up several feet; which is right. I have two vines that are trained long, and run twenty feet, that are doing better than any others that I have.

Prof. Budd — The mite that works on the pear works on the leaf and fruit of the Labrusca grape. What is known as rot on our Iowa grapes is supposed to be the work of an insect, possibly the apple curculio.

The Committee on President's Address announced that they were now ready to report:

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your committee, to whom was referred the President's Address, will report, that among the many valuable suggestions in that able paper, the one recommending the establishment of an experimental station especially deserves the serious consideration of this Society. Your committee believe a horticultural and agricultural experiment station should be established and maintained in efficient working condition by the State. We further believe that this station can be established at less cost, and that it would be far more serviceable, if located in connection with our State University. We therefore submit the following:

Resolved, That in the judgment of the Illinois Horticultural Society an agricultural and horticultural experiment station should be established in connection with the State Industrial University by our next State Legislature.

PARKER EARLE,
J. M. PEARSON,
T. MCWHORTER.

Hon. S. H. West — I wish to inquire the probable cost of an experimental station of this description.

Parker Earle — In New York the annual cost is about $20,000. Here we have the farm, buildings, and professors. The expense, therefore, would be exceptionally small.

Hon. S. H. West — When in the legislature it was my pleasure to favor all the appropriations that I thought would be of public benefit. I am in favor of this movement, but know too well how difficult it will be to get an appropriation for the purpose.

Parker Earle — Mr. Corbet tells me that the cost of running such a station in New York does not exceed $7,000.

Prof. Burrill — I am deeply interested in this question. A number of these stations have been established in Europe, and several of the Eastern States are engaging in the work, and if we expect to keep abreast of the times we must not longer neglect it.

Prof. Ragan — Those of you who were at the New Orleans meeting of the Mississippi Valley Horticultural Society remember my position on this question. That the original appropriation, or

land grant, made years ago to the several states for this very purpose, to teach something practical, is ample, if it has not been diverted into some other channel, to establish a station of this kind. I suggest that you investigate this, and see if you have not ample means at hand for this purpose.

Prof. Budd — Many of you know Prof. McAfee of our State. As we had no means to meet the incidental expenses of his department I took charge of the work, and asked the legislature for an appropriation. They gave us $750. This, with the sum the college is able to contribute, has enabled us to do a valuable work. We have the largest collection of iron-clad fruit trees in the world. If you cannot get such an appropriation as you need, accept a small one and do the best you can.

Prof. Burrill offered the following resolution:

Resolved, That a committee of three be appointed by this Society to inquire into the needs of a State Experimental Agricultural and Horticultural Station; to collect the facts already ascertained by established stations; the amount of money required for the purpose, and to prepare a memorial on the subject to be presented to the legislature of the State at its next session.

Resolution adopted with the motion that this committee be appointed by the chair.

J. M. Robison — This resolution implies money. The expenses of this committee must be met. Are we prepared for this? Is there not danger of asking too much and getting nothing. I think there are about 25,000 acres of land yet unsold, which will bring a sum that will do much toward this work.

Parker Earle — I regret to have anything said to discourage this work. The scheme of endowing this institution originated in this Society. Our Industrial University is eminently practical, and I regret that more of our intelligent farmers do not give their sons the benefit of its training. The trustees cannot compel farmers' boys to attend it, or prescribe what they shall study, but I wish to say it is doing a good work, and subserving the interests of the agriculturists of the State. The object of the resolution is to advance this work, and I think we can safely spend a small sum for the purpose.

Hon. S. H. West — I wish to inquire of Prof. Burrill if the appropriations already made do not cover this point.

Prof. Burrill — I cannot answer the question. Some of the appropriations include experimental work, but I think that most of the appropriations of last winter were for special purposes.

SECOND DAY — Evening Session.

After calling to order, President Galusha said that he had just been informed of the death of J. S. Johnson, of Hancock County, which had occurred since our last meeting, and in a few well-chosen words paid a fitting tribute to his memory.

It was moved and carried that A. C. Hammond be added to the Obituary Committee, and directed to prepare a paper on the death of Mr. Johnson.

Prof. W. H. Ragan, of Perdue University, Lafayette, Indiana, was introduced, and delivered the following lecture on

THE RELATION OF THE COMMERCIAL FRUIT GROWER TO THE COMMISSION MAN AND TRANSPORTATION COMPANIES.

Those of you who have learned from the programme of this meeting that Prof. W. H. Ragan would deliver a lecture at this time on the above topic, are destined to disappointment in two particulars, first, when I assure you that I am in no sense a professor, and second, that this, instead of a *lecture*, is but a simple paper upon a subject of vital importance, truly, yet written in a plain and unpretentious style.

Commercial Fruit Growing, in the sense in which I use the term, is comparatively a modern occupation; more properly, perhaps, an occupation of recent origin. This is most especially true in relation to all small fruits and fruits of a perishable character. This is not the result of favorable climatic changes, or even of improved conditions of soils and varieties, but more largely due to recent facilities for reaching the great centres of population and thus supplying, to a class heretofore regarding a fruit diet as a Sunday luxury, what is fast growing to be regarded as a necessary of life.

You will thus see at once that the writer is disposed to look upon the relations of the classes that stand at the head of this paper, as mutual; that, so far as the commercial fruit grower is concerned, whatever will aid him in placing his fruits before the consumer in the best possible condition and in the shortest space of time, is a boon to be desired. This the transportation companies and

commission men are doing. It is true, they have not reached perfection in their work; neither have we in the discharge of our duty. It is with a view of calling attention, in a friendly way, to existing abuses, that I have selected the topic I have for this paper.

I am fully aware of a deep-seated prejudice that exists in the minds of many fruit growers towards MIDDLE MEN; that they regard them as (using the mildest possible term) a necessary evil. That they are necessary we will not doubt; that they are evil, may, or may not, be the result of a variety of circumstances. These circumstances depend, not wholly, but largely, upon our part of the work as fruit growers.

More men succeed fairly in growing fruit than do in disposing of it to good advantage afterwards. This is largely due to bad picking and packing. Your trees and plants may have done their full duty, the fruit abundant and quality fine, but you pick it in a careless and slovenly manner, and pack it after the same style, if you do not do even worse by trying to slip in all the inferior and defective specimens in such a way as not to be seen by the purchaser, thus clearly exhibiting a willingness to deceive. Of course you will consult economy and use second-hand packages, unsightly, uninviting, and often rickety. In this condition you present your fruit to the transportation companies. There is nothing in the general appearance of such packages that entitles them even to the respect of an ordinary railroad man, and of course it would not be reasonable to expect him to respect that which the owner has shown so little regard for, and he *don't, either*. Your fruit reaches its destination, after an eventful voyage, in the condition it left you, if not much worse, a condition wholly unfit for a first place in any respectable market. Add to this a consignment to some second-class commission man in some back alley or obscure street, because, perchance, he proffers to sell your fruit at a low rate of commission. Result: unsatisfactory; railroad companies and commission men thieves and rascals. Listen to the siren song of a new and enterprising candidate for favors, who has concluded to go into the commission business "for luck." Send next consignment to him. Part of the packages fall to pieces in transit, and the remainder fall among thieves at the end of the line. Disgusted fruit grower advertises fruit farm for sale "at a sacrifice," perhaps preferring to invest the proceeds in Chicago options. This picture is not overdrawn, but is painted from real life.

Another, whom Providence has rewarded for diligent toil with a bountiful harvest, handles fruit carefully in every particular. All defective specimens are rejected. No fruit is included in a package that would not grace his own table on any important occasion. Inferior specimens are disposed of in some other manner. Only new and clean packages are used, and they made secure and safe from breakage. The proprietor's name and address, with the variety con-

tained, is plainly stamped on each package. The railroad men know this man; he is a regular customer; he is come to stay. They respect him and his goods and they are "passed through" in good order to some first-class commission man who readily finds first-class customers at paying prices. His returns are satisfactory. The demand increases for this particular brand of fruit. The fruit grower, if he does not grow wealthy in the ordinary acceptation of the term, he does in a clear conscience and a spotless and unsullied character, and he is alike an honor to himself and to his calling.

Now who can doubt, when this subject is viewed in this light, and I am sure it is the correct view of the subject, that the interests of these classes are mutual. That what will secure the best and most satisfactory accommodations from transportation companies, is to grow more fruit along their lines and to give it to them in a more secure and inviting shape, and they, in turn, will lay it down at the doors of commission men in a condition to guarantee its rapid distribution to consumers at fair prices. Thus all will be benefited, even the denizens of crowded cities who are now too often strangers to the luxury of good, wholesome fruit.

I have now presented my subject in brief, trusting that this intelligent body of practical fruit growers may take it up, and, if possible, assist in devising plans of mutual co-operation between these several interests that have too long been regarded as antagonistic, and thus better the conditions of all concerned,—the fruit grower, the transportation companies, the commission men and the consumer.

Parker Earle being called upon for his opinion on some of the points presented, said he did not feel the speech-making impulse stirring within him, but would answer any questions that might be asked.

Question—Do you employ commission men to sell your goods?

Answer—Yes; I sell all my berries through commission men.

Question—Do you change often?

Answer—No, never.

Question—Do you ever lose anything?

Answer—No; never lost a cent in my life in that way.

Question—What per cent. do you pay for selling your fruit?

Answer—I always pay ten per cent. If a man offers to sell for less I am afraid of him.

Question—Do you use full quarts?

Answer — Yes, always; no fruit grower should ever use anything else.

Question — Do you always use new packages?

Answer — Yes; I never use second-hand packages. I think it will never pay to use such packages.

Question — Do they not use return packages at the east?

Answer — Yes, almost exclusively; but I do not approve of it. The fruit men do not approve of it, and there is not a word to be said in its favor.

Question — Do you ship by express?

Answer — No, by freight. Charter the car, and load and unload ourselves.

Question — Do you ship other fruit than strawberries?

Answer — Yes, raspberries. They should be shipped in pint boxes. I cool all fruit before it is shipped, and ship in refrigerator cars. I am speaking, of course, of berries. Our own cooling house is a very simple one, with double walls, cooled by suspending ice. No system of ventilation is necessary. The best cooling houses have no change of air.

Question — How do you ship cherries?

Answer — I do not grow cherries, but they are mostly shipped in quart boxes, same as strawberries.

Question — Do you ship black raspberries same as red, in pint boxes?

Answer — Yes.

Question — How often do you pick the different kinds of berries?

Answer — Every day; and you know, gentlemen, there are seven days in the week, and if you are not prepared to pick every day during the berry season you had better not go into the business of berry growing. Some strawberries, for instance, Longfellow and Sharpless, will sometimes be better picked but once in two days.

Question — Who do you find to be the best berry pickers?

Answer — Women and grown girls are by far the best and most rapid pickers.

Question — What do you pay?

Answer — Two cents per quart for strawberries, and two cents per pint for raspberries.

Question — How often do you pay?

Answer — Twice a week.

Question — What will a quart of strawberries weigh?

Answer — From ten to twenty ounces. It depends upon quality and variety.

J. M. Pearson — I like Prof. Ragan's remarks about marketing fruits. We must exercise judgment in this as in other matters. The Lord makes little apples, and when he sends them to me I am going to sell them the best I can.

J. L. Budd, Professor of Horticulture and Forestry, Iowa Agricultural College, delivered his lecture on

THE FRUIT QUESTION IN THE PRAIRIE STATES.

Mr. President and Members:

Climatically Europe may be divided into two great portions. These are known to writers on the geographical distribution of plants as the "north plain" and the "east plain."

The north plain includes the north of France, Belgium, Holland, North Germany, Denmark, Prussia, and most of Poland. As with England this plain is modified in climate, and made a land of verdure, by the influence of the gulf stream on the west, even more completely than the west coast of our continent. Over all this section the Sophora, Pawlonia, and the trees and plants generally that thrive with Mr. Parsons, at Flushing, Long Island, are things of health and beauty.

From this equable and relatively humid clime, or from the south of France and England we have mainly received the varieties, or the parents of the varieties, of the fruits we cultivate in the Middle and Western States. Yet some of these fruits have proven hardier and longer lived than others.

A careful study of the great collections in the nurseries of the milder portions of Europe will soon show how we happened to get the Duchess, Fameuse, Gros Pomier, Drap de Or, etc. The great nurseries, like those at Metz, Angers, Berlin, etc., have a trade with portions of Austria, Silesia, Bohemia, Hungary and Switzerland, where the ameliorating influence of the ocean breeze is cut off by

mountain ranges. Hence we find blocks of Possart's Nalivia, Bauman's Reinette, Batullen, Boiken, Winter Citron, Duchess, Pome de Neige, Drap de Or, and many of the fine summer and autumn apples of Southern Russia.

Systematic selection would give us very many apples nearly or quite as hardy as the Duchess from the old Chiswick gardens near London, as we saw on these grounds many varieties of the apples of the Volga loaded with fruit, said to have been grown from the original scions received by Andrew Knight from Simbirsk on the Volga. Accidently, from this importation, the Duchess came to Canada, and has become the king iron clad of the great Northwest. Unfortunately our importations have been selected by parties in the mildest portions of the Eastern States. So far as I know no horticultural expert of the prairie States has studied the great collections of even the north plain with a view to selecting varieties of any of our fruits suited to regions with dry hot summers and very cold winters. Our varieties have come to us as a thing of chance rather than systematic selection.

As we enter upon the east plain of Europe the horticulturist will not fail to notice a sudden change in soil, trees, shrubs and plants, becoming more decided and marked with each degree as we go northward and eastward. With a good map of Europe before us we can get something of an idea of the extent of this plain, and of the reasons for its inter-continental climate.

The Carpathian and Caucasus ranges on the south cut off mainly the soft winds from the Mediterannean and the Gulf Stream. North of these mountains we notice no elevation marked on the great tract constituting fully three-fourths of all Europe, excepting the Valdai hills northwest of Moscow, and this bluffy section no more deserves the name of hills than some of the bluffs of our Iowa rivers. The great plain includes Northern Austria and all of Russia in Europe. Except on the Tundras of the far north, and the half sandy tract extending inland from one to three hundred miles east of the Baltic, we find no timber on this the greatest of prairies, except along the streams, and the many great planted forests dotting the steppes in which the Russian government takes just pride.

The soil is a varied and modified drift and lacustrive deposit, resting on limestone corresponding to that of the west, not excepting the shingling of the several deposits toward the northeast. The change of climate, as to rainfall and aridity of air on the east plain, is noted as we pass eastward toward the Altai range of mountains in Asia, while with us the dry region is reached in passing westward toward the Rocky Mountains. As we enter upon this plain from the southwest—say at Proskau, in North Silesia, where, at the King's Pomological Institute, is found one of the largest collections of fruits, trees and shrubs of inter-continental Europe, we notice a sudden dropping out of everything we call tender at the west.

Of the varieties of fruits we know we find the Duchess, Red Astrachan, Fameuse, Ribston Pippin, Drap de Or, Belle de Boskoop, and Russet apples; the Flemish Beauty and Bessi de la Mott pears; and the English Morello, Late Kentish and Early Kentish cherries. Yet in the preferred list of winter apples we find Bauman's Reinette, Possart's Nalivia, Batullen, Boiken, and many other sorts of the apple, pear, and cherry not known to our lists, and only described fully in the very complete works of Lauche, entitled "Deutche Pomologie." This recently published work, in three volumes, by one of the most competent pomologists of North Europe, should be added to the libraries of our horticultural societies and agricultural colleges, as it is the best statement of facts relative to the origin and races of our cultivated fruits suitable for northern inland culture yet published.

This region, extending, say, to Warsaw, in Poland, and Kiev, in Russia, is an interesting one to the horticultural student, as it may be called the "border land," where the fruits of the east and west have *met* and become, in the course of time, *intercrossed*, giving, in a large measure, trees with the hardiness needed in this portion of the east plain, yet bearing fruit equalling — and in some cases superior to, on account of the drier air — the best found on the north plain. The pears and cherries of this region are peculiarly interesting. Of pears, the Sapiegauka, Red Bergamot, Confessel's Birne, Funtovka, Grumkower, Siegel's Winter, Salzburg, etc., are there far hardier than the Flemish Beauty (known as Belle de Flanders), and some of them, we think, will be less liable to blight than those we have tried, on account of their adaptation in leaf to stand a dry air and hot sun.

The cherries include very many varieties of the low-growing Griottes, which line the public highways over the plains to an extent not observed in any other country. All of these are considered hardier in tree, better in fruit, and more regular in crops than our Early Richmond, or any one of the Flemish or Montmorency race.

A class of sweet or half-sweet cherries is also largely grown in this part of the plain which, in leaf and bud, resembles the Dukes, yet the trees are low and round, topped like what they call the Amorels. So far as I know, the cherries of this region are not known on this continent, except a few trial specimens on the college grounds at Ames.

Passing eastward from Kiev to Koursk, Orel, and Veronesh, we find the apple, pear, cherry, and plum grown for home consumption and exportation, yet we find very few of the varieties last referred to. This is forcibly impressed by notes taken down from the dictation of Dr. Fischer, of Voronesh, who has had a long pomological experience in this region. Said he, no Silesian or Polish fruits will grow here profitably except a few of our native fruits which have strayed into their orchards, and which they may now claim as their own, like our Antonovka and Longfield apple, and Bessemianka pear.

His select list of winter apples for profit reads as follows: Antonovka, Arabka, Babuschino, Reinette Ruch de Veronesh, Roshdesvenskoe, Red Serinka, Zelonka. Of pears, Bessemianka, and the varieties derived from the indigenous Bergamots take the lead. Of cherries, only the varieties of what is known as the Vladimir race are grown for profit. Of plums, only the red, blue, and black of the indigenous race. All the varieties and species of the conifers of the north plain disappear, and the few seen are Cembra pine, from the Amur, *Pinus Rigensis*, and two or three spruces and firs from West Siberia.

In this region, it is well to say, that different provinces, and even different parts of the same province, grow varieties of apple and pear which have long been local. For instance, we found on the old Bogdanoff estates four hundred trees of a very fine winter apple, looking very much like our Domine, but larger and handsomer. We were told that it had been grown by the family for over four hundred years, yet we saw it in no other part of Russia. So, also, at this place we found an excellent hardy pear of the Grucha race (pears are here divided into two classes: (1) Grucha, or pear-shaped, and (2) Bergamotte, or round-shaped), which had long been grown by the Brogdanoffs, which we failed to hear of except at Tula, where it had been carried by a nobleman of the province. The lack of interchange, and the universal habit of seed planting among the peasants, has multiplied varieties in peasant sections to an extent difficult for us to comprehend, yet in these peasant collections the preservation of races is very remarkable: one section, for instance, has fixed a race of green apples with blushed cheek; another section a race of high-colored striped apples, like our Duchess, etc.

The soil here is a rich, deep, black drift, much like that of Central Illinois. The summers are long enough, and with sufficient heat for the ripening of dent corn, the tomato, and the melon, and the winters often register 40° below zero without snow. An advantage in apple and pear growing here, as in all parts of Russia, is the universal use of the wild apple and pear stocks, by budding or grafting above the ground.

As to quality of fruits at this interior point, we saw no large apples coarser or poorer than Ben Davis and Duchess, and no small apples as low in quality as Gilpin and Lansingburg. The best apples rank in quality, size, and appearance with the Fameuse, Baldwin, Dominie, and Willow, but we found no winter sorts to equal our Jonathan and Grimes' Golden.

The best eating pear grown in quantity was Bessemianka, which is smaller but perhaps nearly equal in quality to Flemish Beauty.

The cherries of the Vladimir race are better than our Morellos for dessert use, some of them equalling the Ostheim. The plums are, in texture, flavor, and firmness of flesh, much like our Damson. The Moldavka, here largely grown, is larger and coarser in texture than the Lombard.

Passing still eastward three hundred miles to the provinces of Saratov and Simbirsk, on the west bank of the Volga, we reach a climate with less annual rainfall, less snow, and still hotter and drier summer air on account of the prevalent southeast winds passing over the deserts of Arabia, Persia, and of Southeastern Russia.

While the temperature of winter is not much if any lower than at Voronesh, many varieties grown in the latter province are dropped from the profitable lists on account of their foliage proving defective when exposed to the desert winds. Here the many varieties of the Anis and Borovinca are king. In the largest commercial orchards — we visited one near Saratov containing over 12,000 bearing trees,— the Red and Blue Anis are grown in surpassing quantity for export to Moscow and to the far northeast, on the confines of Siberia. They are in size, shape, color and quality, much like our Winesap, though when grown in the dry air and soil of this region, they have far more color and bloom than we ever see on the Winesap. Simbirsk seems the natal home of the Borovinca race of which our Duchess is a fair representative. We saw very many varieties of the race which in bud, leaf, color of twig, habit of growth, and even the color, stripes and bloom of the fruit closely resembled our Duchess. Yet some of the varieties are sweet, some sub-acid, and some are summer, autumn and winter sorts. It is known that the Duchess came from the Volga region, and I have no doubt that its parents at least were from Simbirsk. Less extensively some varieties of the Arabka and Steklianka are grown, and the Antonovka is being introduced in young orchards from the west. As to the pear, the common and apparently indigenous Bergamots and Gruchas are grown to a greater extent than the consumption demands for this low grade of cooking pears. Standing on the tower of the cathedral in Simbirsk one can see many square miles of the bluffs and the plain back of it covered with apple and pear trees. While the apple is mainly grafted, and the best sorts only grown in quantity, the pear seems mainly grown from seed. While very fair pears for eating, and the best for culinary use, are found in proprietor orchards, the peasant planting covering the country is mainly of low grade seedlings. An intelligent lawyer of this ancient city, much interested in horticulture, is trying to secure suitable machinery for grinding and pressing the immense surplus of common pears in this region, and utilizing the juice for perry making. If he succeeds in this we may be able to procure pear seeds for stocks, and with a view to introducing a race of pears able to endure a low temperature and our hot dry summer air, without showing blight.

We have a few seedlings of this Volga Bergamot from seeds taken out by hand when on the ground, which we shall watch with some interest. It must be remembered that Simbirsk is on the 54th parallel of north latitude, and fully 1,200 miles inland from the Baltic, on the very verge of the desert region, where no crop can be

grown except by irrigation. Yet at Saratov we saw a tree of this primitive race of Bergamot over three feet in diameter.

Going still north of Simbirsk we reach, on the 56th parallel, the ancient Tartar city of Kazan. We were invited to inspect the orchards of this coldest climate of the world where orcharding is really a paying business, by the conservator of cultivated and natural forests of the province, whom we met at the forestry convention at Petrovsk, near Moscow. We expressed doubts as to making the growing of fruits profitable on the 56th parallel of north latitude, and fully six hundred miles east of Moscow. "Come and see," was his laconic reply. He met us by appointment in the City of Kazan, and led us on a three-day trip among the orchards of the province, grown mainly by peasant proprietors as a source of revenue and profit. We travelled rapidly from orchard to orchard discussing modes, methods, and varieties. Not while memory lasts will we forget the tens of thousands of low, bushy trees, or rather large shrubs, we saw loaded with beautiful and really good apples, in this land where the extreme winter temperature has reached 58° below zero, Fahrenheit. As an instance, the large orchard of Count Pauluci, on the edge of the open prairie back of the Volga bluffs, and a few miles southwest of Kazan, was planted about thirty years ago, and contains about forty varieties of the apple. The little trees of all these sorts are low-headed, bushy, and the trunks, near the ground, will not average more than seven inches in diameter, and the topmost apple could be reached by standing on a low box made for the purpose. Almost without exception the trees seemed healthy, exempt from our usual signs of winter injury, and were literally loaded with even-sized, high-colored fruit. The names of the apples in this orchard are now before me as taken under the trees, but except the omnipresent varieties of the Anis, peculiar to all the Volga region, it would be useless to repeat them in this connection.

The indigenous Bergamot and Grucha pears are yet found on every estate, growing much larger in tree than any of the apples, and as defiant to wind and weather as the native Caragana or Poplars.

The cherries are equally common, and always of the Vladimir race. Plums are abundant and cheap, grown on bushes often not more than four feet in height. They are red, blue, and black, and in size and quality much like those at Saratov and Orel.

Going westward from Kazan until we reach a point about one hundred and fifty miles east of Moscow, we strike the great commercial cherry-growing region of Russia in the Province of Vladimir. It is evident that the position is a thing of chance, as the soil and climate is no better for cherry growing than is found in provinces where only wheat is grown. Here we find tens of thousands of acres covered with cherry bushes, usually with five or six stems, which are thinned out from time to time, very much as is practiced

with us in the renewal system with the grape. In the cherry season whole trains are loaded with cherries for Moscow, Tula, St. Petersburg and other principal cities of the plain. All the varieties are called "Vladimir," yet they differ widely in size, color, and excellence of flavor. The best are nearly sweet and very much better than any cherry we can grow on our prairies.

This rambling talk is a seeming departure from the topic named in the heading of this paper, "The Fruit Question in the Prairie States," but we must not forget that our orchard fruits are not native to our continent, and I wished to draw attention to the fact that we have reason to believe that some part of the great east plain of Europe has the apples, pears, cherries, and perhaps plums, suited to every part of the Great West and Northwest, even to the base of the Rocky Mountains and to Lake Winnipeg on the north.

So far in our history our experimental horticulture has been a thing of chance. We have followed the lead of the States east of the great lakes. Should we not commence to row our own horticultural boat, procuring our trial fruits from a like rather than from such an unlike country as Europe south of the Carpathians and the Caucasus?

While hopeful and even certain in regard to our prospective gain in the introduction of the fruits I have named, with the probable addition of the apricot, we will not be likely to receive from any part of Europe varieties of the peach, grape, raspberry, or strawberry superior to those we now have. Eastern Asia has peaches hardier than the Persian form common to Europe and America, specimens of which we have in our college collection. And Persia has grapes, tons of which we saw on the Volga, promising for trial where the common peach will grow, and farther north with winter covering. The fruit is fifty per cent. better than any of our native forms, and the foliage will bear a dry air and a hot sun as well as our Labrusca.

Dr. Sanborn — I wish to call attention to the statement of the Professor that he traveled for several days through orchards loaded with fruit, in a latitude where the mercury sinks to 58° below zero. Their trees are low headed bushes rather than trees. Let us try this plan and perhaps we may obtain better results.

Prof. Budd — Mr. Charles Gibbs, of Canada, took great interest in these dwarf-appearing trees, loaded with high-colored and really good fruit, found in the Province of Kazan. The idea I want to get at is that there is a fruit for every section. We are disseminating varieties gratuitously; commenced four years ago. Cions of over three hundred varieties have been sent us, which we have mainly propagated by top-working on hardy trees like Gros Pomier and

Oldenburg. As soon as our stock of any variety will warrant trees in small lots are sent out to all parts of the prairie States for trial.

Dr. Schrœder — Did you see any birds in Russia?

Prof. Budd — This brings up the forestry question. Over forty per cent. of the great plains of Northern Europe are covered with forest. The usual plan is to establish great tracts of timber of twenty or thirty thousand acres in extent. In these groves, as well as in the orchards, birds are very abundant and astonishingly like ours.

Question — What are the bird laws there?

Prof. Budd — I did not learn of any laws protecting birds. They have very few insects that prey upon fruits. Great interest is manifested in foresting in that country. The arid plains are first covered with willows, *salix acutifolia*, and others, to fix the drifting sand. When the sand is sufficiently shaded by the willows the Riga pine and other valuable timber trees are successfully started. In the Province of Tula some old forests have been cleared, and trees of new growth, large enough for saw-logs, may be found. Their form of larch, *larix siberica*, will doubtless prove valuable in this country. It will thrive in a climate too hot and dry for the common European larch. It is a decidedly upright and rapid grower, and its timber is fully as valuable as the common species. At Voronesh and Orel we first found the mulberry, which has been so much lauded with us under the name of Russian. The question addressed to the foresters, was the mulberry grown as a timber tree? caused considerable merriment. It is used in Russia as it will be here, as a small sized ornamental tree, of some value as a fruit-producer, often killing to the ground but coming again from the roots, and readily grown from cuttings. The Mennonites in Nebraska brought a mulberry with them from Russia, but it is quite different from the one I have described, and did not prove hardy on the college grounds. We have introduced the best fruiting form found at Orel, Russia, and think it worthy of trial. If planted in considerable quantities it will help to protect our fruits from birds, as they seem to prefer its berries to our more choice fruits. It is also valuable to the silk-grower.

J. M. Pearson — Did you find in Russia an apple you can recommend for Central and Southern Illinois? We have got the hottest

and coldest, the dryest and wettest and meanest climate in the world. We are looking for a good long-keeping apple.

Prof. Budd — Transylvania has a climate somewhat resembling yours. It is bounded partially on the north, and wholly on the east and south, by a high range of mountains — a continuation of the Carpathian — and its summers are exceedingly hot and dry. Introduce the products of that country, try them, and good will certainly come of it. I would recommend especially the Red Batullen apple for trial in your section.

Dr. Sanborn — We would like to hear something from the Professor about the small fruits he saw in Europe.

Prof. Budd — Strawberries are very much like ours in this country. They grow just as fine berries, but lighter in color. Blackberries are much like the Missouri Mammoth that Mr. Wier used to manipulate. Currants of that country are very fine. When rambling about the grounds of the Agricultural College at Moscow we came across some bushes about five feet high bearing a fruit we did not know. The fruit was sweet and very pleasant, and the bushes seemed to be good bearers. Were told that it was a currant. It is altogether unlike any variety we are acquainted with. Their gooseberries are not very good.

Parker Earle — I consider the lecture of Prof. Budd, to which we have listened to-night, one of the most interesting, suggestive, and valuable papers that has ever been read to an American horticultural society, and I move that we express our appreciation by a vote of thanks.

The thanks were so expressed by a rising vote, unanimously.

Dr. Sanborn — We have received much valuable instruction from Prof. Ragan's lecture, and I move that we extend a vote of heartiest thanks to him for his excellent paper.

Thanks were in like manner expressed by a rising vote, unanimously.

Adjourned to meet to-morrow morning at 9:30 o'clock, in the Free Congregational Church.

THIRD DAY—Morning.

Called to order promptly on time by President Galusha.

After prayer by Mr. Samuel Edwards, Dr. Humphrey asked permission to read his paper, saying that it was necessary for him to go home this afternoon. Permission being given, Dr. A. G. Humphrey, of Galesburg, of the Committee on Climatic Conditions, Soils and Fertilizers, proceeded to read

SOILS, FERTILIZERS AND CLIMATIC CONDITIONS.

In the most profitable productions of vegetable forms three conditions are essential, viz: perfectly matured seed, bud or cion, a soil rich in the elements necessary to the production of the form required, and desirable climatic conditions. If any one of these essentials is wanting a failure of crops is sure to follow. Most agricultural products are grown from seed, while many of the horticultural products are grown from root, bud, or cion. Perfect development and early maturity is especially necessary to profitable production. In our own state hundreds of acres of corn were lost last season by being planted from southwestern seed, which required a long season to mature. Such a mistake is not likely to occur again. It is true that last season was especially adverse to the production of corn; the spring and early summer was cold and wet; the last of summer was very dry, being followed by early killing frosts.

SUMMARY OF ESSENTIAL CONDITIONS.

With the best conditions of soil and climate, early and perfectly matured seeds will produce a crop correspondingly early. The success of the agriculturist depends largely upon his careful and judicious election of seed, and the same is true of the horticulturist in his selection of the stock from which to propagate his plants. The range of adaptation to widely different conditions in the production of animal forms is large and varied, while in the production of vegetable forms the range of adaptation to directly adverse conditions is exceedingly circumscribed and narrow. Hence the necessity of learning and obeying the nature of things.

SOILS.

Plants take a large part of their nourishment from the earth, and their productiveness depends largely on the soil in which they are grown. Soils are principally composed of vegetable matter in a state of decay with clay, sand, and carbonate of lime. The vegetable

matter is the wood, roots, leaves, and twigs from forest, grass, straw, or some green crop plowed into the soil, or compost of barn manure. The clay and lime are the product of the gradual crumbling and decomposition of the rocky crust of the earth. We must learn what mineral substances plants take from the soil by an analysis of their ashes. The bases are found to be potassia, lime, and magnesia, and the oxides of manganese and iron. These are combined in the ashes with silicic, sulphuric, and phosphoric acid, along with a small portion of common salt. The phosphates predominate in grains; lime exists in large proportions in grapes; potash in edible roots, and silica is found in straw. The clay of soil is necessary to retain the ammonia, however supplied, and store it up for the future use of the plants. It serves also to retain moisture in the soil, and gives a tenacity that enables the roots to secure a firm hold in the ground. Sand should also exist, or should be supplied in due proportions, in order to give the proper degree of porosity to the soil, and thus insure the entrance of the air and fertilizing liquids, and the draining away of all excess of water. Lime is directly the building material for all forms of vegetation, and unlocks other treasures in the soil, which then becomes ready food for plants. Chalk, marl, or limestone have the desirable effect of sweetening peaty and marshy soils, which soils are rendered sour by having too large a proportion of vegetable matter. This sweetening process has the effect of rendering such soils highly productive. Different portions of the earth's surface are adapted to the production of different vegetable products on account of natural differences of soil. Hence the great variety in forest growth, almost endless variety of grasses, shrubs, and weeds distributed over the earth. When these conditions of soil are radically changed the natural products are correspondingly changed. It has been observed that when a forest growth of hard wood has been removed, a growth of soft wood takes its place, and vice versa. In nature we find many soils so very rich in plant fertilizers that they are adapted to a wide range of different plant products, while others are so poor as to produce nothing superior to the detested sand-burr.

FERTILIZERS.

Soils can be changed, modified and improved by fertilizers. Hence the necessity of the producer's knowing just what fertilizers to use in order to produce the largest and best yield of the product. In supplying fertilizers to the soil for the food of plants the nature and habit of the plant must be carefully studied. Some plants are gross feeders, as the currant, and will thrive on almost any coarse litter at hand, while the finer fruits require highly pulverized and well rotted fertilizers; and the delicate flowers require a fine compost adapted to their wants. It is true that plants take a large portion of

their food from the atmosphere, existing in the form of a rich dust cloud of unequal thickness, probably several feet above the earth's surface. The elements of this dust cloud may reach the plants directly through its leaves by the action of moisture and sunlight, or it may be dropped upon the soil by the great law of molecular attraction, or it may be washed down by the rain or dew, and so be supplied to the plant through the spongioles of the roots. Those plants called air plants throw their roots out into the air, and feed through both roots and leaves from this rich atmospheric soil. It is by means of the culture of the soil in all its details of composting, pulverizing, commingling, turning, moving, or giving needed rest, that man is enabled to secure the best results in plant production, both from the ponderable and imponderable forces of nature.

CLIMATIC CONDITIONS.

Plants are circumscribed to set boundaries by conditions of climate. In the cold icy regions of the North, and on high mountain ranges, nature can produce little but lichens and mosses, while in the temperate and tropical regions vegetable products of almost infinite variety spring into being in profuse abundance. Under climatic conditions may be considered atmospheric motion or winds, storms of all kinds, electrical conditions, heat, moisture, etc. However, in the practical operations of agriculture and horticulture thermal conditions and moisture especially concern our study. And yet, to secure these conditions, every means possible should be used to break the force of winds, check the destructive tendency of storms, and favorably modify electrical action.

The judicious distribution of forest growth through all agricultural and horticultural districts will help to secure these ends, and so change and modify climatic conditions as to bring rich reward in better and more bountiful crops of the product grown, to say nothing of the great value of forest products, and of timber itself.

The late Prof. Tice observed a difference of two degrees of temperature on opposite sides of a belt of timber during a winter storm. Every individual has the means of improving the temperature of his plantation by the judicious arrangement of groves of timber, timber belts, fences, buildings, etc. It is probable, at this stage of our knowledge of climatic conditions, we cannot decide how great changes may be wrought by man all over the globe, in a more equable temperature, by a judicious distribution of forest growth. When associate effort in the distribution and growing of forests shall be legally conducted by county, state, national, and inter-national authorities, we may reasonably expect that the golden age of vegetable production is near at hand.

DRAINAGE.

Another important factor in securing favorable climatic conditions for plant production is drainage. Every area of land holding excess of moisture maintains also a lower temperature, rendering such area unproductive if not untillable. Thousands of acres, both in this country and in Europe, have been redeemed from a barren state to the most productive by proper drainage. Our own State is thoroughly aroused to the importance of tile drainage. The manufacture of tile has become an important and leading industry in all parts of the State. The most thorough drainage not only raises the temperature, and carries away all excess of water, but also facilitates the access of air and the incorporation of fertilizers into the soil.

When man, by the study of science and the nature of things, has found out all the essential conditions for the successful propagation of all plants of equanimic nature, he will have received into his hand the key to the highest civilization and human improvement.

A. G. HUMPHREY.

The Secretary announced that he was prepared to make out return certificates for those entitled to them, and requested all such to apply at their earliest convenience for their certificates, which would enable them to obtain return tickets at the reduced fare.

Prof. W. H. Ragan, of Indiana — Before departing for my home I desire to express my pleasure in being permitted, after a lapse of a dozen years or more, to again attend a meeting of this truly valuable association. Although I have had the pleasure of again meeting many old acquaintances, I am reminded that they are no longer young; that the finger of Time has painted the locks of those whom I before knew as in the prime of life and vigor of manhood. That he has also been present with you I am more fully and more painfully convinced by the void that exists in your ranks. I no longer meet the *fathers* here. I miss Bryant, and Huggins, and Dunlap, and Hull, and Flagg and that good old Father Shepherd. These, and more, have gone since I met with you before. But now I see in their places other grey heads that are pushing forward the noble work. Meantime I am painfully impressed with the absence of those who should soon be ready to take your places, for ere long they will be to fill, or the work must stop. You are really now an association of veterans. This fact appeared to me as I entered your hall last evening. Where are the young men that you are educating to take your places? I fear that they are not sufficiently encouraged. There are, at least, a few noble exceptions here, for I have already had

the pleasure of making the acquaintance of some young men, and even a *youth* or two. It has given me great pleasure to speak words of encouragement to such. I have not forgotten when the lamented and noble-hearted Warder stooped, as I then thought, from his position of fame to notice a mere green country boy of sixteen, as I was. I have often thought that this event had more to do in shaping my destiny than any one event of my life. Let us not, then, forget the duty we owe ourselves, as well as the young, and whenever and wherever we can, let us cheer and encourage them in our chosen calling. Again I thank you for many evidences of respect and honor shown me, and with a blessing on you and your work, I bid you, one and all, good-bye.

President Galusha — Shall we go on with the programme arranged for to-day, or call for reports that have been passed?

J. M. Pearson — I am in favor of taking up such reports as the writers of are here to read for themselves, and should like to hear from Mr. Earle on strawberries.

Parker Earle, on strawberries, was loudly called for.

Parker Earle — Gentlemen: I shall make you all happy by not reading a report, as I have none to read. In fact I had forgot that I was to report on strawberries, but I will willingly answer any questions.

E. A. Riehl — I would like to hear from Mr. Earle on fertilizers for the strawberry.

Parker Earle — I have used castor-bean pomace with good results — use it with ashes, about one bushel of pomace to nine of ashes, and spread it with a Kemp's manure spreader.

Question — How much can we afford to pay for ashes for this purpose?

Answer — I have paid six cents per bushel for them and considered it a good investment.

Question — Do you regard the castor bean pomace valuable as a manure?

Answer — I do; valuable for any crop. We use half a ton to the acre A less amount will produce valuable results. We often fertilize the hills, using about a teaspoonful to a plant.

Question — Have you used salt as a manure?

Answer — To a limited extent, but with no appreciable results?

Question — How do you plant?

Answer — A man opens a place for the plant with a spade and a boy sets the plant. A man and a boy will set 4000 to 6000 per day. I formerly planted with a dibble, but that is a slow way. We are always successful.

Question — How far apart do you plant?

Answer — We make the rows three and a half feet apart; Wilson should be planted about a foot apart in the rows. We prefer to plant some varieties three and a half feet apart each way, and cultivate both ways.

Question — Have you used bone dust and phosphates?

Answer — Yes; but am not able to report satisfactory results from the use of bone dust. Phosphates have done better for us, but we prefer the castor bean pomace.

Question — What is the cost of the pomace?

Answer — $20 per ton.

Question — Have you used coal ashes?

Answer — No, and have no faith in them.

Question — When do you apply fertilizers?

Answer — In the spring before plowing the ground.

Question — Which is the earliest strawberry?

Answer — Crystal City is earliest. I do not grow it. The difference between the ripening of this and Crescent is not more than four or five days.

Question — How often do you renew your plantations?

Answer — We never take but two crops from the same planting, and I have almost come to the conclusion that only one is better. The tarnished plant bug is now the greatest enemy we have. That, with other insect enemies, multiply rapidly with us, making frequent renewals imperative.

Prof. Budd — Mr. Dixon says arsenic water will effectually destroy this insect.

Parker Earle — I should fear to use arsenic, but think pyrethrum will answer the same purpose without the danger of poisoning the consumer of the berries.

Question — Describe the *tarnished plant bug?*

Answer — It is a small bug. At first the size of a flea, when it does most harm. They continue all the season, becoming perhaps a little larger than a chintz bug. It has long been known as a vicious fellow, but never supposed to injure strawberries until quite lately. It was first discovered in our fields by my son, and described by Prof. Forbes.

Dr. Schrœder — What variety do you consider the most profitable?

Parker Earle — I do not like to commit myself on this question, so many conditions of soils and markets are to be taken into consideration. The Wilson, all things considered, is perhaps the most popular variety. I cannot grow the Wilson, I am sorry to say. The Great American is the biggest and finest appearing berry. Our most profitable variety is the Crescent.

Question — What varieties do you use as a fertilizer?

Answer — We have used them all, and are not prepared to say that it has any influence on the fruit.

Prof. Budd — I am very sure it does have an influence. I think I know that it does. Perhaps I ought not to be so positive. Several years ago the question came up at the College, and since that time I have been experimenting and observing closely the influence of pollen from hermaphrodite or perfect blossoms upon the fruit of pistillate varieties. And these observations and experiments have fully convinced me that this influence is so marked and positive as to render an entirely pistillate variety like the Crescent so totally different when fertilized by two sorts of widely different characteristics, that it would not be recognized as the same strawberry. I will instance one of our experiments. We planted the old Colfax variety in a field at a distance from other varieties of strawberries, and used varieties of marked peculiarity to fertilize with, and in every instance

the fruit partook strongly of the character of the fertilizing plant or berry. In another case, Red Jacket, or, as the students called it, the Pieplant strawberry, was used to fertilize a bed of Crescent, and the berries from that bed certainly partook strongly of the flavor of the fertilizing berry. Downer's Prolific is now used on our own grounds to fertilize the Crescent.

Prof. Burrill — The question of fertilization is one of great importance. We all know that in many cases it has a marked effect on the fruit. See how corn is changed. You have all eaten bananas, and know they have no seeds; that is because the blossoms are not fertilized. Now for the evidence we have had here just now. I should just like to try that experiment again and again. Let us experiment and repeat and observe until this question is settled beyond a doubt.

J. M. Robison — All vegetable productions are more or less influenced by this principle. Corn shows it in a marked degree. The color and shape of the grains, the color of the husk, and sometimes of the cob, are affected by it.

Prof. Budd — We do not need any further proof of that. We see a marked instance in the melon family. Our cultivated strawberry is peculiar in this; it is a hybrid, and the crossing of species has resulted in the imperfect development of the organs of fertilization of many of our best varieties. Most of the Rogers' hybrid grapes are imperfect in much the same way, and must be fertilized with other varieties. Prof. Bessey, who you know is a very close observer, has often called our attention to the difference between Crescents fertilized with different varieties. While I am on this subject I will say it needs to be investigated by extensive experiments with and upon the other fruits as well as the strawberry. It has been observed that the Chickasaw plum bears better when planted where it can be fertilized by the native variety. We frequently have evidence that apples are affected by cross fertilization.

J. M. Pearson — This subject certainly needs more thorough investigation. I could bring more conclusive evidence, supported by experiments and thousands of witnesses, to prove that wheat turns to chess, than the Professor has given us to prove his position.

D. B. Wier — I have fertilized the Crescent with seven or eight different varieties, and have not noticed the effect Prof. Budd speaks of.

Parker Earle — I fear that some of the members, and perhaps the reporters, do not fully comprehend this question of fertilization — that is, they are liable to get it mixed up. As to the most popular varieties, I do not wish to be understood as advising anybody to grow soft berries unless they can ship in cold cars. The Wilson is yet, and is likely to remain, the most popular variety for distant markets. It may be bad taste, but it is a fact, that the Chicago people want it more than any other variety.

S. M. Slade — This fertilization of the blossom is a matter of great importance, but it is in good hands. If Professors Budd, Burrill and others take the matter earnestly in hand we will soon know something positive about it. About ashes as a manure for strawberries and fruit trees. One season I used about eight hundred bushels, half leached and half unleached, and derived no benefit from the application. In the east they are very valuable, but on our rich soil do little if any good.

Prof. Burrill — I have used ashes on my grounds with no apparent benefit.

W. W. Jones, of Camargo, of the Committee on Strawberries, reported as follows:

THE STRAWBERRY REPORT OF EASTERN AND CENTRAL ILLINOIS, COMMENCING AT CAMARGO.

The fall of 1882 was quite favorable for a good growth of the plants, the winter being one of very few thaws and freezes. Where the plants were sufficiently mulched they came through the winter in splendid condition, and bid fair to make a good crop; but we say right here that we have had no summer, have had spring and fall, but summer failed to put in its appearance. The nights of May 21st and 22d we had quite a freeze, and I had some strawberries at that time half an inch in diameter and some still in bloom. I went into my fields early in the morning before sunrise, and found all the berries more or less frozen, some almost half grown frozen hard, so I did not have the tenth of a crop. This being the case, it has been impossible to give any accurate report from this part of the State of any of the new varieties. I have made inquiries as to the crop at Mattoon, Illinois, and find it a little better again than Decatur, Illinois. I find the freeze also made havoc in their crop.

Dr. Price is the main strawberry grower at the latter place, and I saw his strawberry field in the latter part of April and thought he would have a splendid crop. He is cultivating them in matted rows

and had quite a number of varieties on his grounds. He has the Old Wilson planted alternate with Crescent Seedling, Captain Jack, Sharpless, Monarch of the West, and many others of the new and old varieties. I visited his farm again this fall, and asked his foreman as to the different varieties, and which kind he would probably set out next spring. His answer was, "Will not set but two varieties, and those the Old Wilson and the Crescent. As I am near Decatur, and it is a good strawberry market, I will set one row of Wilsons and two rows of Crescent." Again I asked him what berry he thought most profitable. His answer was, "for home consumption and near market, the Crescent: but if I was growing berries to ship I would grow nothing but the Wilson."

During July and August we had it very dry, and gave us a good opportunity for thorough cultivation. The fall gave us splendid rains, and the plants are in splendid condition for a fine crop next season. Owing to the light crop the prices have been satisfactory (I mean to those farther south), for we, all through this part of the State, did not get enough to pay expenses. We had no insects to injure our plants this season.

I have been in the strawberry business since 1863, and my experience has taught me, for cheapness of cultivation, and for fine large berries, that always bring a good price, set a new plantation every spring, and take one crop from the plants, then turn all under. By so doing I am not bothered with insects, and I prefer matted rows.

JACKSONVILLE, ILL., Dec. 13, 1883.

Dear Sir: In reply to your postal of the 11th, would say that the strawberry crop in Morgan County was as near a total failure as it could be. We had four hundred quarts off from eight acres.

Yours truly, F. M. DOAN.

CHAMPAIGN, ILL., Dec. 14, 1883.

Mr. B. W. Hamlin, a successful small fruit grower here, thinks of the new strawberries Captain Jack and the Manchester are the best. Plants in very good condition as to growth, owing to fall rains and warm weather. Mr. H. says James Vick makes the most vigorous growth of any, but he has not fruited it.

Yours, B. F. J.

Respectfully submitted,

CAMARGO, ILL., May 21, 1883. W. W. JONES.

Report of Committee on Pear Culture:

PEAR CULTURE.

Gentlemen of the Illinois State Horticultural Society:

When the State Board selected me to furnish an essay on "Pears and Pear Culture" they surely did not know how sick I was of the subject. If I wanted to ruin a fruit grower I would advise him to grow pears exclusively, and all the different varieties. But as I would like to see them prosper I will advise them to grow only a few varieties, say Bartlett, Seckel, Duchesse, and Howell, and let all the balance alone. Buy one-year-old trees, set them in fairly good soil, cultivate well three or four years, then seed down to grass and keep it mowed close. Do not cut the trees, except to remove suckers, if you can avoid it. Do not plant on a hot southern hillside; a level or a southernly slope is best. I believe it an excellent plan to plant evergreen trees all through your pear orchards. It is not original with me, but I notice my pear trees grown in that way are comparatively free from blight.

The oldest and best pear orchard of any size within my knowledge is that of Alexander Brown, of Villa Ridge, Illinois, a son of your old president, Judge Brown. The orchard is on good soil and nearly a level surface, with a grove of timber on its southwest border. Mr. Brown says the orchard is twenty-two years old. He says he would plant on good soil with north aspect; would plant Bloodgood, Howell, and Bartlett, for profit. Has one Bloodgood tree that never blighted, and which bears alternate crops, light and heavy; sells very well. Mr. Wm. Minnich's experience is much the same as is Mr. Brown's; his orchard is eighteen years old, and as good as any except Mr. Brown's. Messrs. Bailey and Handford, of Makanda, claim that pears can be grown there free from blight; I wish they would give us their method, for that is just what we all want to learn. One of their modes is to raise wheat in the pear orchard, but others have lost all their trees by just that plan. I recollect a man from Missouri, some ten or fifteen years ago, talked to me a half day to explain his method of preventing blight; his theory was splendid, but I think his practice and experience will be like that of all the rest of us.

I have a young orchard of one thousand trees at Villa Ridge, four years old, that looks now very nice, but I have no hope of its remaining good many years; it is contrary to the history of pear growing in the West. Yet let all of us fruit growers plant some pear trees, as we cannot afford to lose so fine a fruit, only don't depend on that for a living, but take your pears thankfully when you can get them, and have some apples, grapes, and strawberries to keep the breath of life in your bodies, as pears will be a very poor reliance.

Respectfully yours,

ALTON, Dec. 7, 1883. F. HAYDEN.

Dr. Schrœder, of the same committee, was then called on for his report. He said he had intended to prepare a paper on Pear Culture but had neglected to do so, and would give a short talk instead. Ladies and Gentlemen: I am a victim of pear culture. I am sorry I did not know as much about it twenty years ago as I do to-day. It would have saved me much money: $2,000 I have spent in experiments with nothing to show for it. We Germans like pears because they are grown in Germany at one-fourth the cost of apples. I once got five hundred selected trees of E. Moody, of New York, and planted them on different slopes. Many of them died with blight—some two hundred or more. Some of these sent up two or three shoots from the ground, which have done well, and are now bearing nice crops. The Flemish Beauty is a favorite of mine, and does well now. The Tyson has done well with me, but is overladened with fruit on the western slope. Madeline does well on the lower slope near a stream of water, as also does the Rostiezer. Professor Budd found pears growing in the north of Europe where the mercury sinks to fifty degrees below zero: it is not, therefore, the cold that kills our trees. We should continue to plant pear trees, but be careful to select varieties adapted to our soil and location.

Question — Would you advise to plant pears all over the State?

Answer — Yes.

Question — As a nurseryman?

Answer — No, sir.

Brof. Budd — I think, with a proper selection of varieties, pears may be grown profitably over most of the State. Mr. Avery, of Burlington, Iowa, is a very successful pear grower.

Report of Committee on Currants and Gooseberries was next called for, and Samuel Edwards, of Mendota, responded by reading:

CURRANTS AND GOOSEBERRIES.

Currants and Gooseberries constituted, in the days of my boyhood, the list of small fruits in more than nine-tenths of farmer's gardens in Central New York. For raspberries we went to fence corners of the fields and new clearings. Strawberries were not cultivated. It was never my fortune to find wild ones enough for a good taste, and the first bountiful mess of them was enjoyed at "The Evergreens."

No fruits are more easily grown than currants and gooseberries. After planting they are very generally left to themselves, and in consequence come far short of their capability in quantity or quality of the fruit produced.

Plants are grown from cuttings six to eight inches long of one-year-old wood, taken at any time after growth is made for the season before swelling of the buds in spring. As early as convenient in the fall is deemed the best time, as the end becomes calloused preparatory to sending out roots on opening of the ground in spring. Fine plants for planting out permanently are thus grown in one year.

Before winter weather the surface of the ground is covered with a heavy dressing of well-rotted manure, and this, with leaves, prairie hay, or straw, as protection from severe freezing, is to be removed early in the spring. Should any of the cuttings be raised by frost a trusty hand presses them firmly back.

Instead of digging trenches with a spade for planting, we open a furrow with a mold-board plow, turning it slightly to the landside; cuttings are pressed in, furrow half filled with dirt, which is tramped firmly, then fill in balance of furrow, leaving but here and there the tip of a cutting to be seen.

Good results have been attained by wintering cuttings in cellar, standing them upright in sand a little moist, and planted early in spring. Some thirty years since a lot of twenty thousand were set in January, no protection given, with good results.

Rows of currants six feet apart, four feet in the row, are good distances for bearing plants. Vegetables may be grown between them for a couple of years. Gooseberries need less space; say five feet between rows. Both require clean cultivation. Mulch heavily before hot weather. Partial shade, or shade part of the day is beneficial. A northern slope in this latitude desirable. Soil suitable for corn, with a liberal application of well-rotted manure annually. While young little pruning is required, after which a renewal of young wood must be kept up by removing, in the fall or early spring, part of the old wood. Some of the young growth may be used for cuttings.

Of over twenty-five varieties of currants proved the following are retained: Red and White Dutch, White Grape, Victoria, Cherry, Long Bunch Holland, and Black Naples. On trial, with hopes they may prove desirable: La Versailles, Fay's Prolific, Fertile D'Angers, and Stewart. Our favorites are Black Naples for jam, and Victoria and White Grape.

Houghton and American Seedling gooseberries are enormously productive, but not more so than the Downing, which is twice their size, at least their equal in quality, and the bush more upright in growth. Mountain Seedling, after ten years' trial, rejected for unfruitfulness and poor quality. English varieties generally mildew so badly as to render them of no value. Occasionally a green variety has been grown in various parts of our State, of large size, good quality, and generally free of or affected but little with mildew.

Insects seldom damage these fruits or plants here. The currant worm, it is said, may be destroyed by dusting the plants with powdered white hellebore. Have never had to fight him.

In this era of small fruits increasing care and attention are being given currants and gooseberries. One planter, in the north part of the State, is to set next spring 14,000 plants for raising fruits.

SAMUEL EDWARDS.

Mendota, Ill., December, 1883.

B. F. Long, of Alton, of the same committee, sent in the following report:

To the President and Members of the Illinois Horticultural Society:

I have been interested to learn what could be done to save our orchard of the currant from drouth and insect depredation, and to obtain an annual crop of that excellent and invigorating fruit, but with little success. Still, I hope to succeed. For the past three years the fruit has been almost a total failure. In 1881 the drouth was so severe as to destroy most of the currant orchards in this vicinity. Norway Spruces, forty feet in height, root and branch, White Pines and Hemlocks. The currant bushes were left in a very enfeebled condition. The orchard was well mulched, but seemingly with little benefit. In the spring of 1883 prospects of fruit were very small, and few bushes escaped the drouth of 1882. Early in the spring I commenced deep plowing between the rows of bushes. I followed the plow with the hoe, cutting off torn roots. As the season advanced I discovered that the plants were invigorated and the leaves were rapidly developed by this process. This cultivation was continued with good success, obviating the effects of the drouth. At the present time there is a prospect of a small crop of currants another year, and a fine supply of new sprouts for setting.

The varieties that I esteem most highly are the large Red Dutch for the principal crop. The best for table use is the White Grape. Largest and most showy the Cherry currant. I consider the currant the most healthful fruit in use, and the various methods of prolonging its time should make it universally desired.

Gooseberry.—This fruit is not as much raised as twenty years ago in this vicinity, and though it holds its place well as a culinary article, for the sourest of tarts, the purchaser meets you with, "Too sour for me;" "takes too much sugar." The Houghton Seedling is the variety of this vicinity. If well cultivated, mulched and thinned out, will satisfy the desire in amount of crop, but the sale of the fruit seldom fails to give dissatisfaction.

Respectfully submitted,

North Alton, Ill. BENJ. F. LONG.

C. N. Dennis—Mr. Edwards, do the leaves of your currants drop prematurely?

Samuel Edwards—Yes; all our currants drop their leaves early.

Question — Does the borer trouble your bushes?

Answer — Yes: it often destroys them.

S. M. Slade — Is the Long Bunch Holland more exempt than other varieties?

Samuel Edwards — I have found it exceedingly healthy, and that may be the reason.

Question — Where do you market your currants?

Answer — I generally ship to Chicago, but have not always found it profitable. Once I shipped forty-five bushels and got only $14.00 in return. Was cheated, I suppose. Think local markets the best usually.

Dr. Schrœder — Years ago I put out a large plantation, but did not make anything from them. This season they have sold for twelve and a half cents per quart, which will pay well. Every man should grow them for the use of his family.

Dr. Small was called upon for his report on

PLUMS.

For a few years past, in my nursery business, having made the growing of plum trees a specialty, and being thus led by pecuniary interest to seek, from all accessible sources, information on the subject of plum culture, I am probably better qualified to report on this than on the other fruit referred to this committee: Mr. Clayson and myself.

I shall therefore confine my remarks to plums, and say nothing about cherries.

The condition of plum culture in our State at the present time is not encouraging. As every novice in fruit culture knows, the almost universal destruction of the fruit by the curculio has had a decidedly discouraging effect upon the planting of plum orchards. Although I have traveled over much of Illinois, and made many inquiries, I have found, or heard of, but one region of country in the State where the cultivation of the plum is thought to be profitable, and that is the extreme south end. There I found parties growing the fruit for market quite extensively, and with very satisfactory results.

Plum trees live and grow luxuriantly all over the State, and but for the ravages of insect enemies, would be, next to the apple and peach, our most valuable fruit-bearing trees; and for the northern section, more valuable than the peach, because more hardy.

Relying upon the energy and push of our people, we can confidently predict that the day is not far distant when the plan will be evolved for the complete circumvention of the little Turk. Then, probably, the plum will be appreciated in this country as it is, and has been for ages, in Europe. To show how highly it is esteemed in some parts, at least, of the Old World, I will quote from a letter, written more than thirty years ago, by Andre Leroy, a noted horticulturist of France:

"There are in the world some favored countries that nature takes pleasure in loading with her gifts. Among these countries we should certainly place the rich valley that the river Loire bathes in the part included between Tours and Angers, a distance of about one hundred miles. There all the trees have a luxuriance of vegetation that we scarcely meet with elsewhere. The tree which offers the most profit to the cultivator, and with the least trouble, is the Saint Catharine plum tree. Indeed the cultivation of this tree has been carried to such an extent that it is not easy to give a perfect idea of it. In this rich and fertile valley, where the habitations are so near each other that we might call the road between Angers and Tours a long street or faubourg extending from one of these cities to the other, the gardens are planted with this variety of plum trees.

"If we cross this country in the months of March and April, when the plum trees are covered with blossoms, we are not astonished that 'Tours is called the garden of France, and Angers its nursery.'

"The plum tree has spread from the valley to the hills, where it is as common now as in the valley. The cultivation has extended into soils which differ essentially from that of the Loire. This fact proves that the tree is not capricious as to the nature of the earth upon which it grows.

"The quantity of plums we gather on a country of about one hundred miles in length and fifty in breadth, is so considerable that it is not possible to establish its precise amount; but it makes a commerce, which every year produces several million dollars."

The variety mentioned by Leroy—the Saint Catharine—has not succeeded in our locality, nor has it been popular in any section of this country.

In fact, out of the vast number of varieties brought to us from the Old World, and the numerous valuable varieties grown in this country from the seed of foreign sorts, only one, the Lombard, can be called popular in this State.

The Lombard is the most planted, and more generally esteemed than any or all other varieties of the *Prunus Domestica*. But it is to the improved native American sorts that we must look for the coming plum of Illinois; and where is there a fruit that gives greater promise of reward in the direction of new varieties than these native plum trees?

There are two distinct families of plums indigenous to this State: the Canadian and the Chickasaw; one or the other growing in great abundance in all our native woods.

There are, also, growing in many places, wild plum trees, which seem to me to differ decidedly, in some important and marked characteristics, from both of these families. All these native species and varieties are much improved by cultivation.

They all show a marked tendency to sport, that is, vary greatly when grown from seed, so that the chances of growing new and valuable varieties by hybridizing, and the selection of seeds from the best varieties now in cultivation, are certainly very promising.

I have here scions of several native varieties to show you the difference in the wood or twigs. These scions have been preserved for grafting; they are correctly labeled and are for distribution. Any person present is welcome to some of each variety. The fruits of these varieties differ as much as do the scions, but the most noticeable and marked differences are those of the foliage. Some varieties have leaves very much like European sorts; others, leaves closely resembling the peach. In fact the Blackman, in wood, foliage and general appearance of tree in the nursery, so closely resembles the peach that persons have, within my hearing, flatly contradicted men at work in the nursery, declaring that they knew it to be a peach tree. There is a family resemblance in the foliage of most of the Chickasaw varieties; but in the other families of natives there is much greater variation in the foliage, hardly any two having leaves exactly alike; and some varieties have leaves so distinct and unlike anything else in cultivation as to attract the notice of very superficial observers.

Let me call attention to the Weaver as a variety, having remarkably large and handsome leaves, with a smooth shining surface, and it is unquestionably a pure *Prunus Americana*. Will also call attention to the Bassett as a variety, having distinctly marked foliage. This is a variety sent out a few years ago from New Jersey, and represented to be a cross between the European and the native Beach plums.

A week ago Dr. Sanborn, horticultural editor of *The Farmer and Fruit Grower*, Anna, Illinois, pointed out to me some quite large trees of this variety; at least the doctor called them Bassett's American plum, and I could discover no difference between the wood of these trees and that of the true Bassett, and you will see, by looking at these scions, that the wood has marked characteristics.

In a recent issue of his paper the doctor says: "The trees bear full crops every year of beautiful red plums, of which it takes only one to curl a man up so he will not ask for plums again for twelve months. He sold $15 worth of these plums from one tree this summer. The Chicago folks ate them. The plums make excellent jelly. The curculios know too much to waste their time in stinging them."

Mr. Kroh, on whose grounds these trees are growing, gave me their history. Many years ago he obtained them by digging sprouts upon a farm some miles away, and he believes them to be native to that part of the State. He has, he informed me, three distinct varieties growing; one is yellow, and two are red, but the red ones differ greatly, one of them bearing a fruit as large as a Wild Goose plum, and of much better quality than the one growing by the roadside which doubled up the doctor.

I have devoted more time and space to the consideration of this variety or species than its merit would seem to warrant. But its hardiness to withstand cold, its vigorous and healthy growth, its early fruitfulness and prodigious bearing qualities, lead me to hope that it will be the parent of varieties of greater value.

Before closing this paper I will allude briefly to a family of plums very recently brought to notice. They come to us from the north of Europe. I have not cultivated them long enough or seen enough of them to form a decided opinion of their value, or to trace their botanical relations. The tree is dwarf in habit, bearing abundantly when a mere bush. Like our American sorts, differing widely in appearance and flavor of fruit and season of ripening, but unlike them in having no astringency of skin. Possibly we may obtain varieties of value from these.

A. L. SMALL, Kankakee, Ill.,

Of the Committee on Plums and Cherries.

A paper was presented and read by D. B. Wier, of Lacon, on

SOME NEW NATIVE PLUMS.

Some twelve or fifteen years ago I first heard of the Wild Goose plum, and at once wrote to its most prominent introducer, the lamented J. S. Downer, of Fairview, Todd County, Kentucky, for scions of the genuine thing, which were received from him by the first mail, with that true generosity so well known to all who had dealings with this most noble gentleman and horticulturist. These scions were grafted into the topmost branches of bearing Minor plum trees, and the second season gave me a fine crop of this beautiful fruit, the seeds of which, and the Wayland — another pure Chickasaw — were saved and carefully planted. They grew finely, and some two hundred of these seedlings have been in bearing now from three to eight years, and I have looked them over very carefully each year, except in the year 1882, when I was away from home. At least two-thirds of the plum seeds planted at that time were Minor seed. Near by where they were planted I had trees in fruit of the Wild Goose, Wayland, Newman, (another pure Chickasaw), Union, and many varieties selected from the native wild plums of my neighborhood, and also many varieties received from seed selected personally in Northwestern Iowa, Dakota and Nebraska. Therefore I had every facility for comparison and experiment.

The soil upon which these trees are growing is better adapted to the two principal insect enemies of the plum fruit, namely, the plum curculio and the plum gouger, than it is to the plum tree, it being a rich, light, dry, sandy loam, our native plums usually requiring a rich, moist, heavy soil. In fact, I do not think a better location

could be selected than these trees had to test the value of a plum for this climate, and its ability to withstand its insect enemies.

Now for the result. Nearly all these seedlings of the true Chickasaw type have produced full and perfect crops of fruit to maturity for the past four to eight years, with no failure from any cause. (I will here note, in the way of parenthesis, that so far as my experience goes with them, the Chickasaw family of plums are not liable to have their blossoms or young fruit destroyed by late spring frosts like many other of our orchard plants.) From this lot of seedlings I have selected six varieties of the pure Chickasaw type, ripening in succession, that I think well worthy of preservation and extended propagation and dissemination. Of the named varieties of the Chickasaw planted here, and I have had them in fruiting, all that I have heard of the Wild Goose has proven it to be the earliest and the Newman the latest, except one of my seedlings, which is a little later, to ripen their fruits. The fruit of the Wild Goose is the is the largest, and that of the Newman among the smallest. These six best seedlings of mine fill in the gap completely in regular succession between these two varieties; the Wild Goose ripening with me from July first to the twentieth, the Newman from August fifteenth to September tenth.

In quality, both for table and cooking, my new varieties are all superior to the older named varieties, some of them notably so. In size of fruit they are none of them quite so small as the Newman nor so large as the Wild Goose. They are in color from a light scarlet to a dark crimson. All except one are handsome ornamental trees. These are the facts about these new plums as I have observed them. Now, curiously, the Chickasaw type of plums seems to be entirely and completely hardy with me. Yet the center of its native habitat is about Memphis, Tennessee, and it extends from here, near its probable northern range, to the Gulf of Mexico, and probably farther south. A plum that will withstand the winters of the past ten years, as these have, and that perfectly, there is seemingly little danger of their ever being destroyed by cold.

Curiously the plums from the northwest in this lot, especially those from Minnesota and Dakota, seem to be less injured by the curculio than the Chickasaw, but the young fruit seems to suffer a little more from the plum gouger than do the Chickasaw. But I did not, in this short and hastily written paper, purpose going into the subject fully of our native plums and their enemies, but to simply call attention to these new plums.

But I must say, that if we are going to make more than one species out of our native plums, that we will have to add other and well defined species, certainly as well defined as any division or species heretofore made, and surely form a species for the northwestern type, which is as clearly distinct from our native Illinois type as the Chickasaw is. My observations have proven conclusively to me,

or at least so far as my observations have gone, that we have but one species, true species, of native plums in the United States, but that we have many distinct geographical races which completely shade into each other, and which hybridize, or rather cross freely, when grown near each other. Even the European plum seems to make fertile crosses with our wild types, as we observe in the variety known as La Caradeuc. But I did not intend to give fully the biology of our native plums, but only call attention to these new varieties.

I was greatly interested in the fruiting of a fine round, large dark crimson plum the past season, kindly sent me by Mr. O. M. Lord, of Minnesota City, Minnesota. The quality of this plum is very fine as grown here, and it shows great productiveness. It is surely, as I see it from a very limited experience of course, a very valuable acquisition here. It is very productive yearly. In quality, as grown here, it is very superior, flesh firm, a little coarse, but of very fine flavor for a native, resembling the European plums. This plum has been carefully examined, I am told, by Prof. J. L. Budd, of the Iowa Agricultural College, and found to differ materially in some points from the Illinois type of wild plums.

I will only add that seedlings of the Minor show it to be nearer the Illinois type of wild plums than it is to the Chickasaw type, and that but one tree among my seedlings that seems exactly similar to our Illinois type of wild plums has perfected any plums, owing to the insect enemies of the species, and this one has given a full and perfect crop of very fine fruit each and every year for the past eight years. Yet it may be from Dakota, as there were a few seeds among the lot planted that I gathered in that State; but this tree has not the smoother, rounder, stiffer leaf of the Dakota plums, but its leaves are exactly similar, elongated, rough, and plaited, to our own natives.

LACON, ILL. D. B. WIER.

Prof. Budd — The Bassett plum has merits I would like to call attention to. It is exceedingly hardy, a good grower, and prodigiously productive. A splendid cooking plum and remarkably easy to propagate. There is no corner on it; scions are easily obtained, and any school-boy can make them grow. Attention has frequently been called, by Dr. Gray, to the near identity of the trees and shrubs of our northwest coast to those of Northeast Asia. The plums that are indigenous to this section of the country are a very different race from those found in the regions named. But the Blue plum of Minneosta is much like them, and this and the DeSoto, and perhaps the Weaver and other varieties, were first found near old Indian encampments. May we not suppose that our aborigines in their wanderings carried these from their native home and planted

them where we found them. I merely call attention to this point on the botanical part of the question, as it may account for the superiority of these varieties. The Blue plum of Minnesota is hardy, easily propagated and valuable for many purposes.

D. B. Wier — In Arkansas the Chickasaw plum grows everywhere luxuriantly, and bears abundantly. The fruit is utilized in various ways; hogs live on them during the season of fruiting.

Prof. Burrill — Mr. Wallace has asked me to present a tree protector, which he claims will prevent all injury from rabbits and mice. I would say more about it if it was not patented. You can examine it at your leisure.

Reports of Special Committees being called for, the following on Obituaries was offered and unanimously accepted:

TO THE MEMORY OF DR. JOHN A. WARDER.

BY TYLER McWHORTER.

Mr. President and Horticultural Friends:

At this, our annual meeting, we are brought under the shadows of sadness in having occasion to chronicle the death of some of our most esteemed friends and prominent co-laborers in the mission of horticulture. Since our last annual meeting Father Bryant, of Princeton, our old friend Smiley Shephard, and Dr. John A. Warder, of North Bend, Ohio, have passed away.

It is a consoling reflection that these, our departed friends, were not taken away in the prime of life. They were permitted to continue their lives of usefulness down into the declining years of age. It is assigned to me, on the present occasion, to present a notice of the death of our horticultural friend, Dr. Warder.

In presenting a few brief statistics relating to the life and labors of our departed friend it is proper that I should acknowledge my indebtedness to his worthy son, Prof. Robert B. Warder, through whose courtesy I have obtained a memorial paper published by the *American Journal of Forestry*. It is from this paper I have collected some of the facts here presented, relating to the life and labors of him for whose memory we may ever cherish the deepest feelings of respect.

Dr. John A. Warder died at his residence, North Bend, Ohio, on the 14th of July of the present year, in the seventy-second year of his age. Dr. Warder was born near Philadelphia, Pa., Jan. 19th, 1812. He was the eldest son of Jeremiah and Ann Astor Warder. His early years were spent in a suburban home called "Woodside." In his early years he evinced a love for the study of nature, which

was the leading characteristic of his mind through life. In 1830 his parents moved into a romantic sylvan situation near Springfield, Ohio. He graduated in the Jefferson Medical College of Philadelphia in 1836. He settled in Cincinnati in 1837, where he was identified with various subjects of public interest that tended to the profusion of knowledge or the advancement of science. He was for five years president of the Society of Natural History. He was for many years president of the Ohio Horticultural Society, and vice-president of the American Pomological Society. He directed public attention to the importance of beautifying public and private parks and cemeteries, and exercised an influence to elicit an interest in the subject of landscape gardening.

In 1850 he commenced the publication of the *Western Horticultural Review*, which was continued for four years. He spared neither time or money in attending the meetings of various scientific and horticultural societies, to which he ever added much interest and contributed many valuable papers. He was connected with the Western Academy of Natural Science, with the American Association for the Advancement of Science, and also with the American Forestry Association. He made one of the most valuable contributions to pomological literature which this country has produced. His large and exhaustive work on Apples, which was intended as a first volume of a series on American Pomology has perhaps, no equal for the completeness of its treatment of all the conditions of successful apple culture, and the systematic classification and description of varieties.

He was induced by his love of the scenery of nature to purchase a portion of the lands once owned by President Harrison, at North Bend, Ohio. In 1855 he gave up his practice of medicine and moved to his new home, where he spent the remainder of his life.

He was earnestly devoted to the study of our native forests. Probably no other person ever attained to a more thorough knowledge of the great diversity of trees of North America than the departed Dr. Warder. As a persevering student of horticulture he had few, if any, superiors. Probably we can have little conception to what extent our Western States are indebted to Dr. Warder for the general interest that has been diffused among the people in planting orchards, and the general cultivation of fruits.

One of the distinguished traits for which our departed friend was characterized was a cordiality of heart. It was doubtless in a great measure from this impulse of his nature, with the feelings of friendship he entertained for the members of this Society, that he was induced to come from his home in Ohio to meet with us at our annual meetings. When we consider the many long journeys he has made to attend our annual meetings, and how much we have been indebted to him for practical suggestions and the general interest of our meetings, we may feel deeply conscious of the tribute of respect that is due from this Society to the memory of Dr. Warder.

ARTHUR BRYANT.

BY J. B. TURNER.

Said the Hebrew of old, "I would not live always." In a later age the Greek responded, "Call no man happy till he is dead," and the number of persons, sound in mind, but "tired of life," I have personally seen and read of within a few years has surprised me. But many men regard death as an unfeeling, if not needless Divine appointment. Suppose, then, that DEATH, "the king of terrors and of all our evils," as we call it, were abolished, WHAT THEN? What would inevitably follow?

It can be, and has been, mathematically demonstrated, that if a single pair of human beings had been put upon the earth at the time of our reputed Adam and Eve, with no attending death, doubling in every ordinary generation till this time, and allowing to each the space for a medium man, we should now have upon the earth a compact cylinder of population, covering half the globe, as thick as they could stand; and standing on each others heads, in a full line, reaching beyond the sun; while many of the insects and fish, and some of the birds and animals *(none of whom ever sinned)* would form a like cylinder reaching beyond the fixed stars. This, incredible as it may seem, is only the old game of shoeing the horse for a penny a nail, doubled at every nail, which every tolerable school boy can verify for himself; and the farther back we remove dates the more astounding the case must become.

Such results would make population quite too dense for our comfort, and lead us all to say, "I would not live always," and to thank our FATHER IN THE HEAVENS that HE (and not we and our teachers) is at the head of the universe of being; and that He has vouchsafed to give us LABOR and TOIL, as our best earthly discipline here, and in his own wise and good time, through DEATH, the crowning gift of all, to release and relieve us of evils sure to come, and pass us onward and upward to higher realms of light and life.

In every philosophical as well as christian view of the case, we may all times well exclaim, "oh death, where is thy sting; oh grave, where is thy victory," and thank God for the inestimable blessings of *labor* and *death*, and our final victory over each of them.

Our friend Bryant, here yesterday, gone to-day; a full-grown flower plucked from our garden — only its perfume left; a chrysalis winged for the skies, instead of piled into an infinite heap of struggling death, miscalled life, covering all the earth and darkening all the sun. It was his privilege and is his glory, that he lived and thought and labored and toiled and suffered among us — and DIED; our loss indeed, but his unspeakable gain, — the highest privilege, the best use, destiny and end that the allwise and infinite Father of all can ever accord to any of his children on the earth; and I have reason to believe that our departed friend so regarded it.

You will allow me to read a sketch of his earthly life from a friend who knew him better, and could give it much better than I can. It was published soon after his death. It is not only *about* the man but LIKE the man. As it is being read you will seem to hear the old familiar voice still speaking to you:

He was born in November, 1803, at the Bryant homestead, in Cummington, Mass. He was originally of feeble constitution, being greatly troubled in early life with asthma. His father, an eminent and skillful physician, had little expectation of his living. But as he grew older the disease seemed to lose its hold upon him, and through his youth and manhood he suffered little from ill-health. During the years 1822 and 1823 he was fitted for college at Great Barrington, Mass., under the tutorship of his brother, William Cullen. In the winter of 1824 he received a cadet's warrant from John C. Calhoun, then Secretary of War under James Monroe, and entered the military academy at West Point in June of that year. But a prolonged and severe attack of inflammatory rheumatism compelled his resignation in the following December.

In September, 1833, Mr. Bryant came to Princeton and settled upon the farm whereon he has ever since lived. Here he betook himself to the labor necessary to the subduing of the wild prairie, and the building up of a comfortable and attractive home. Most of the work in which he was engaged was substantially the same as that performed by his neighbors. But it soon became evident that he looked at nature with more discerning eyes than most of them. He was not satisfied with the annual crops, and the annual product of cattle and swine. Not that he neglected these by any means; but he thought also of higher things. He planted trees, not alone for windbreak, but also for ornament, in order to diversify and adorn the monotonous prairie. And there they stand to-day, the double row of splendid hard maples that line the street on either side, a conspicuous landmark — a place from which distances are reckoned and directions indicated. Besides these are the evergreens, the charming varieties of indigenous and exotic trees of many kinds, some very rare, which beautify the grounds. They are living monuments, more expensive than any cut in marble and granite, of the essential refinement of the man.

About the year 1845 Mr. Bryant engaged in tree-culture as a business. His nursery soon became well and favorably known. His own name became identified with the movements organized for the propagation of fruit and forest trees. The Northwestern Pomological Society was set on foot about the year 1850 in the town of Princeton. During its continuance he was one of its most prominent members. A few years thereafter it was merged in the Illinois State Horticultural Society. This association still exists, and is actively promoting its beneficent purposes. One of its specialities at the present time is the extension of forest culture. This object Mr.

Bryant had much at heart. In the meetings of the Society he seems to have been always quietly but efficiently active. His reports from committees have about them an air of thoughtful honesty. At the urgent request of members of the Horticultural Society, he published in 1871 a book with the title, "Forest Trees, for Shelter, Ornament and Profit. A Practical Manual for their Culture and Propagation." It is a smallish volume of 248 pages, containing as much downright practical sense, and as little of the opposite, on the designated subject, as one not often finds in the same space. A careful reading of this book by the farmers of the Northwest would undoubtedly result in great blessing to the country, now and hereafter. The subject is one whose importance cannot be overstated. How to extend the forest area of these prairie states is a most vital question. On the way in which it shall be practically answered will depend the comfort and even the civilization of the future dwellers upon these plains. And here, in this book, we have the practical instructions of an educated, sensible practical man.

Honored in death and life by the State Society, and by kindred associations, Mr. Bryant's death has been appropriately and, we may say, affectionately noticed. His memory has been honored by fitting resolutions. Affectionate letters have been addressed to his bereaved family by the colaborers of years gone by. The Hon. G. W. Minier says: "Our loss seems irreparable, especially at this crisis. We are organizing an effort to conserve our forests and to plant new ones. Our eyes turned to this veteran forester for counsel. We feel like Clan Alpine's men, and are ready to cry out,

> 'One blast upon that bugle horn
> Were worth a thousand men.'

His place cannot be filled. Others may come, as wise, as earnest, as devoted, but the sincerity, the tenderness, the patience were all his own."

Mr. Bryant was a thorough man. He was thorough in his scholarship, notably so in his knowledge of the Greek language. He was thorough in his botany. To his mind the trees which he handled had other significance than that which appeared upon his ledger. He felt impelled to look into their structure and laws of growth. He was thorough in his moral convictions and qualities. In his dealings with men he was upright beyond the shade of a suspicion. He was always true, always correct, always clean.

His death was caused by gangrene, which had proved fatal to some of his ancestors. The disease first appeared in one of his feet, and after about three months of gradual progress it attacked the vital organs, and the scene soon closed. His death was such as became him, calm and trustful. He died as he had lived, a firm believer in the christian faith.

Such was our friend and colaborer. We shall not soon see his like again. While we still wait and watch for the morning of all highest human hope, to which we pass only through the draped gateway of death, let his virtues be our virtues, his life and light our life and light; and though earth may fade from our view the sunshine of our immortal life shall never set.

SMILEY SHEPARD.

BY SAMUEL EDWARDS.

He was born March 3, 1803, and was the eldest of ten children.

In August, 1828, he left his father's home on horseback for a visit to the new State of Illinois. During the visit he selected the site of the home he so long occupied, its scenery and extensive views outweighing, in his estimation, the considerations which induced others to pass it by. While looking at the locality he spent his first night in the neighborhood, on what is now the northwest corner of Mrs. Wm. Allen's apple orchard, sleeping alone on the prairie grass, with his saddle for a pillow, and his horse fettered near by. During the night a wolf managed to steal from his stock of provisions a tin cup of butter, but, like some other thieves, he did not know what to do with it when he had it, and instead of licking out the butter closed the mouth of the cup with his teeth and left it.

Leaving Putnam, Mr. Shepard gratified his strong love for romantic scenery by visiting Starved Rock, Sulphur Springs, Buffalo Rock, and the present site of Ottawa. From this point he crossed the country to Rock River and the Mississippi below the mouth of Rock River. On his way back he and his companions made the trip from the Mississippi to Fort Clark (now Peoria) in one day. From this he made his way back home by way of Vandalia, Vincennes and Cincinnati.

April 9th, 1829, he married Elizabeth Paul, who was born in Rockbridge County, Virginia, but came with her family at an early day to Adams County, Ohio. During the early summer he returned to Illinois with his wife, who was supposed to be the first white woman to land from the river in Putnam County. Circumstances not being favorable to the immediate occupation of his chosen site for a home, he made a claim at Point Pleasant, and remained there until the fall of 1830. From a letter dated Point Pleasant, September 27, 1829, directed to Shepherd Moore, Bond County, the following extracts will throw some light on the situation:

"Bring me a side of sole leather when you come. I have sent to Springfield and Chicago both, and could obtain none. Call at Lewis Laughlin's, on the Sangamon, and bring me a washing tub. I sent him timber and pay for making it, by S. D. Laughlin."

The timber was red cedar, taken from the bluffs of All Forks.

During the winter of 1831-2, assisted by his brother Nelson, he built a log house on his first chosen site, and moved into it in February before the chimney was built or a shutter made for the door. Here he lived until his death — a period of over fifty years.

But times of peace, plenty, and independence followed the years of privation we have only faintly pictured. Men became more free to follow chosen pursuits, and to build homes and fortunes in ways as seemed to them best. Horticulture became the pastime of the best years of his life. To plant and tend choice fruits of every kind that would flourish in his soil and clime, gather the fruit and give samples to his friends who would appreciate such favors, seemed to be the most agreeable occupation he could engage in.

He was among the first to grow the grape successfully by vineyard culture in Northern Illinois. His vineyard of Catawbas and Isabellas was planted in 1849, and bore a fine crop in 1851, which sold for fifteen cents a pound. He successfully fruited nearly all the fine varieties of pear, plum, peach, cherry, and strawberry of his day. Naturally enough he loved those of similar tastes and occupations with himself. From these years until the infirmities of old age prevented his attendance on its meetings, he was an enthusiastic laborer in the cause and objects of the State Horticultural Society; served the society one year as its president, and considered many of its members among his dearest friends.

His earthly career was closed by what his physicians considered softening of the brain, and, in the end, complicated with other troubles. The effects of the malady were peculiarly afflicting to his friends, as it gradually destroyed his powers of memory and speech. On this account no satisfactory intercourse could be had with him by his friends for over a year before his death.

The funeral services were conducted by Rev. H. McVay, who preached an earnest discourse at the house on the words: "Let me die the death of the righteous, and let my last end be like His." Agreeable to an oft expressed wish in life, no allusion was made to him in the services.

The presence of a large number of friends at the funeral testified of the kindly regard in which he was held. He was buried at Union Grove, by the side of his wife, who died in 1873.

Prominent mention should be made of the active part taken by Mr. Shepard in the agitation which resulted in the establishment of our State Industrial University, and I will close this brief and imperfect notice by asking that his valuable services in this behalf be not soon forgotten.

J. S. JOHNSON.

BY A. C. HAMMOND.

J. S. Johnson died at his home in Hancock County, in April last, after a long and painful illness.

Mr. Johnson was a man of more than ordinary ability, and took a deep interest, and bent all his energies, in advancing those objects that had for their end the elevation and advancement of the industrial classes. He was a member of the first board of trustees of the Industrial University, and did valuable work in that connection. He has for many years been an active member of this Society, served one year on its Ad-Interim Committee, and has contributed several valuable papers to its transactions. He was also a valued member of the Warsaw Horticultural Society, and leaves a vacant place there that few men can fill.

He was an honorable, true man, a warm-hearted friend, and will be greatly missed from our meetings and the circle in which he moved.

REPORT OF COMMITTEE ON FRUITS ON EXHIBITION.

There were quite a number of specimens on exhibition by the following persons:

S. G. Minkler showed samples of Cayuga Red Streak that were unusually fine, which variety Mr. Minkler finds very profitable. The specimens of Minkler apple were the most brilliant on the table. The samples of Willow, Jonathan and Northern Spy were very fine.

L. A. Wright showed fine specimens of Willow, Jonathan and Grimes' Golden.

Mr. C. N. Dennis showed very fine specimens of Willow, Jonathan, Peck's Pleasant, Winesap, and Northern Spy. Also specimens of the Newport, a new variety from Iowa, that is attracting much attention.

Shackleford is a fine appearing fruit, said to be a good keeper, of fair quality, and has good points.

A seedling from the same lot of seed as the Shackleford of better quality and very promising.

A seedling grown near Morris is quite showy in appearance, is past season, said to be quite hardy, and may be an acquisition.

A. Bryant, Jr.,
A. G. Humphrey,
H. M. Dunlap,
Committee.

Reports of members of the Executive Board of short lists of fruits adapted to the several sections of the State, was next upon the programme, and President Galusha and A. C. Hammond submitted the following lists:

LIST OF FRUITS ADAPTED TO THE SOUTHERN PORTION OF NORTHERN ILLINOIS.

BY O. B. GALUSHA.

Apples.—*Summer:* Sops of Wine, Duchess of Oldenburg, Sweet June, Benoni.

Autumn: Maiden's Blush, Fall Orange, Fall Swaar, Ramsdell's Sweet, Snow, Fulton, Cayuga Red Streak.

Winter: Roman Stem, Wythe, Golden Russet, Salome, Willow Twig.

Plums.—De Soto, Lombard.

Cherries.—Early Richmond, Late Richmond, English Morello, Black Morello (for canning).

Grapes.—Moore's Early, Martha, Concord.

Blackberries.—Snyder, Taylor, Barnard, Stone's Hardy.

Red Raspberries.—Turner, Cuthbert, Thwack.

Black Raspberries.—Soughegan, Tyler, Gregg.

Hybrid Raspberries.—Shaffer's Colossal, Ganarqua.

Currants.—Red Dutch, White Grape, Victoria, Long Bunch Holland.

Gooseberries.—Houghton's Seedling, American Seedling.

Strawberries.—Crescent, Charles Downing, Miner, Cumberland, Longfellow, Windsor Chief, Capt. Jack, Kentucky, Piper, and Sucker State.

FRUIT LIST.

BY A. C. HAMMOND.

At the last annual meeting of the Executive Board each member was requested to furnish at this meeting lists of fruits adapted to cultivation for market, also for family use, in their respective horticultural districts.

Horticulturists are always unwilling to undertake this work, as it is unsatisfactory to themselves as well as to those who adopt the lists; but planters are anxiously inquiring for something to guide them in the selection of varieties, and if we cannot make lists that are perfect, they will at least be very helpful to the inexperienced planter.

If I was planting apples for market the following would be my selection:

Summer.— Red Astrachan, Sops of Wine.

Fall.— Maiden's Blush, Fall Orange.

Winter.— Ben Davis, and where it is known to succeed, Willow Twig, and a very few Winesap and Jonathan.

This is a very short list, but if any gentleman present from Western Central Illinois can suggest a variety that can be safely added, I shall be glad to know it.

We find so few locations in this part of the State where pears, peaches, plums, and cherries can be profitably grown for commercial purposes, that they are scarcely worthy of mention in this connection.

Coming to the family orchard we find very different conditions prevailing, as the man who has a proper regard for the comfort of his family wants those varieties of apples, of the best quality, that will give a succession ten or eleven months in the year, without much regard to productiveness. The following list will about meet this want:

Summer.—Early Harvest, Red Astrachan, Sops of Wine, Early Joe, Benoni, Golden Sweet.

Fall.—Maiden's Blush, Fall Orange, Mother Porter, Fulton Strawberry, Bailey Sweet.

Winter.—Ben Davis, Winesap, Jonathan, Red Canada, Grimes' Golden, Janet, Minkler, Northern Spy, Yellow Bellflower, Baldwin, Broadwell, Paradise, Winter Sweet.

Although pears, peaches, and cherries may not be grown for profit, yet every man who owns an acre of land should plant them for home use, and in great abundance. Bartlett, Seckel, Flemish Beauty, Shelden, Duchesse, and Lawrence, will give as good satisfaction as any six pears that can be planted.

Peaches are so much governed by soil, location, and climatic influences, that the safest plan is for the planter to inquire of his neighbors or local nurseryman what varieties are the most successful, and be governed by their experience. Many of our nurserymen cultivate choice seedlings that are known to do well in their section, and my experience leads to the opinion that they will give us more and just as good fruit as the well known named varieties.

After twenty years' experience with cherries I know of no variety that I would plant with any expectation of fruit but Early May and English Morello.

Reports of Committee on New Fruits, Trees, and Plants, A. C. Hammond, of Warsaw, and H. K. Vickroy, of Normal, were submitted and read:

NEW FRUITS.

Very little in the line of new fruits, that will be of general interest, has come under my observation the past season. Peaches were an entire failure, and grapes suffered so severely from mildew and rot that there was no opportunity for observation so far as these fruits were concerned, and those who make a specialty of small fruits will doubtless give us all possible information in relation to the new raspberries and strawberries.

Coming to apples I can speak more intelligently, as I have, during the last year, fruited several of the new varieties, and will give my impression of their probable value.

The Salome fruited this season for the first time on my grounds. Being in an orchard that was badly infested with curculio nearly every specimen was stung by this little pest, but a portion of them outgrew the injury, and made handsome fruit. The grafts have been set but three years, which seems to indicate that it will prove to be an early bearer. The tree passed safely through the terrible ordeal of last winter, which is a strong point in favor of its hardiness. It is very unwise to form an opinion of any new fruit on a short acquaintance, but what I have seen of this apple leads me to believe that it will, in time, become one of our popular varieties.

I have, also for the first time, fruited Worthen's Winter Sweet, and think it may be safely classed among our best amateur fruits. It has the rich golden color of Grimes' Golden, and also resembles that apple in size, shape, and general appearance.

"Calkins" has not yet fruited on my grounds, but Mr. Calkins tells me that the original tree bore a good crop of fine large specimens this season. It is one of our most promising new varieties.

In the spring of 1878 I planted two hundred Wythe, at the same time planting a Ben Davis orchard. The Ben Davis have made the most rapid growth, but have as yet produced but little fruit, while many of the Wythe trees this season bore from a peck to a half bushel of large, smooth fruit. But on the other side of the question, I am compelled to say that trees of this variety twelve or fourteen years old, also produced very heavily, but the fruit was rough and unmarketable. Just how much of this difficulty was caused by the work of the plum curculio I am unable to say, but am not quite ready to recommend it for general cultivation.

The Celestine has been cultivated in Ohio for fifteen years, but is comparatively unknown in the west. I have fruited it for eight years with but one failure, and consider it valuable for amateur collections. It is of too light a color and delicate texture for market purposes.

At the October meeting of the Warsaw Horticultural Society President Dennis presented an apple that he had received from Frank Harlan, Esq., of Canton, Mo., having a marked resemblance to Ben Davis in size, color, quality, and general appearance. It originated near Athens, Mo., and has been generally disseminated, and is highly prized in that locality. Mr. Harlan says the tree is more hardy, and the fruit a better keeper, than the Ben Davis. If five or ten years' trial bears out the good opinion so far formed it will be a valuable acquisition to our apple list.

Several years ago I became acquainted with the orchard of Jules Charpentier, an intelligent Frenchman residing in Hancock Co. In this orchard are a number of varieties which Mr. C. brought from his native land, that have been in bearing ten or twelve years. The past three years, as is well known, a large portion of our orchards have been nearly barren, but during that time these French varieties

have been uniformly productive, the trees uninjured by meteorological influences, and the fruit smooth and finely colored. Twenty-five kinds from this orchard were exhibited by the Warsaw Horticultural Society at the late State Fair, and attracted much attention by their general appearance and beauty.

My experience with, and observation of, apples from Northern and Southern Europe, has caused me to incline to the opinion that we shall find the fruits of Central and Southern Europe better adapted to our soil and climate, than those from the extreme north.

In the last volume of the Iowa State Horticultural Society Transactions, Prof. Budd gives an interesting account of his visit to Russia, and his conclusions as to the adaptability of the varieties of fruit found there to the changeable climate of Iowa. In the course of that report he tells us that the inspection of the fruit of that region would do more to convince people that they must quit fooling with the fruits of Southern Europe than forty years' talk. My observation does not bear out this theory, as I have found Russian apples generally poorer in quality, and more subject to blight, than our native, or Southern European, varieties.

The professor has given this subject careful attention, and his conclusions are worthy of consideration, but I would not advise any one to plant largely of these North of Europe apples without a more definite knowledge of their adaptability to our rich soil and changable climate. But I would advise orchardists to plant, for experimental purposes, every promising variety that can be procured from Northern and Southern Europe, as well as every native seedling of promise that comes under their notice, and we shall soon find something greatly superior to our present popular varieties.

A. C. HAMMOND.

NEW FRUITS.

STRAWBERRIES.

I am ever on the lookout for better varieties of fruits, and especially of the small fruits. I have found none the past season that I would like to substitute for Crescent, Downing, Capt. Jack, and a few of the older varieties, although there are several new ones I think will prove equal if not superior to them.

James Vick is so near like its parent, Capt. Jack, I question if it is any improvement. Mr. Samuel Miller, of Missouri, the originator, in answer to an inquiry of mine in regard to this variety, says: "With me it never has had a fair chance, but it will stand the drouth with any other, and will outlive and outbear Capt. Jack, and is a little later. In size and quality it is not superior to Capt. Jack in my opinion.

Manchester, I think, has come to stay. It is one of the promising new varieties before the public. I hear good reports of it from all quarters.

Piper's Seedling.—What I have said of the Manchester will apply pretty well to this variety. It is more inclined to runners than the Manchester.

Jersey Queen is doing fairly. I don't think it will prove, for general cultivation, all the originator claims for it. He says: "I consider any other plant as of no account in comparison with it."

Old Iron Clad (Phelp's Seedling).—Plants very vigorous and healthy, and from all I can hear of this variety I think it will prove one of the best.

Park Beauty resembles the Crescent very much in plant. I have not seen the fruit. Said to be very large and of excellent quality.

Mrs. Garfield is a seedling of the Crescent, and resembles it in health, vigor, productiveness, and early ripening, and said to surpass it in size and high flavor. I have seen some notices of this variety not very flattering.

Atlantic.—Has not been tried far from the neighborhood of its origin. Said to be a better shipper than Wilson, with large foliage like the Sharpless.

Prince of Berries.—The originator claims perfection for this new candidate. He claims too much; it will disappoint some one sadly.

Daniel Boone.—I have not seen this variety, but hear good reports from every one who has. In this variety, I think, we will find one of the reliables.

Lacon is a good plant for hill culture, it makes but few runners. It is said to be very productive.

Big Bob.—According to the disseminator's description it is one of the wonders of the nineteenth century. Well, I will wait awhile with patience until I can see the fruit before making my report.

Jumbo is being disseminated by the same party. It is said to be a whopper!

RASPBERRIES.

Tyler seems to be nearly identical with Soughegan. Ripens about the same time, and I think has all the good qualities, both in plant and fruit.

Ohio Black Cap is a very strong and vigorous plant, and a large fine berry. Season between Soughegan and Gregg. I think this variety can be relied on. I have seen nothing but favorable reports of it.

Shaffer's Colossal is a *very* strong and vigorous grower. It has a poor color for a market berry. It is a very abundant bearer, and said to be excellent for canning and drying.

Hansell I have not fruited, but from nearly all reports I think it will prove very valuable on account of its earliness.

Crimson Beauty is indeed a beauty in the hand—on paper. If it proves so everywhere it will be an acquisition to our small-fruit list.

Superb, a moderately vigorous, healthy, and so far as tried, very productive.

Marlboro.—The parties who have all the plants of this variety claim big things for it, which I hope will prove true. From all I can learn it has many good qualities, vigorous, healthy foliage, early and productive. Berries large, bright, red and firm. It will not be offered to the public until the fall of 1884.

BLACKBERRIES.

Stone's Hardy fruited this season with me. The plant is not as vigorous as Snyder, but I think quite as hardy. Fruit smaller than Snyder.

Early Cluster is a New Jersey seedling which is being highly praised by the disseminator and his friends. Said to be very hardy, prolific, and of good quality.

Wilson, Jr., is a seedling of Wilson's Early, and is said to be very promising.

Taylor's Prolific is working its way to the front. It is spoken of highly by good authorities.

Barnard is also proving meritorious.

McCracken was found in Fulton County growing wild in the woods. Mr. McCracken moved to Kansas in the Fall of 1872, taking with him some of the plants, and he reports they have done well every year since. He says they are decidedly superior to the Snyder in hardiness and productiveness.

Stayman's Early.—The disseminator of this variety says: "It is the earliest blackberry grown, combined with hardiness, productiveness, and delicious flavor. This variety is propagated from tips.

Early Harvest is gaining friends, and possibly it may prove very valuable on account of its earliness. The fruit is too small to become very popular.

The *Fay's Prolific* Currant I think a very desirable acquisition to our list of currants. I have seen none but favorable reports of it, and some of them from very high authority.

I think the most popular of our newer varieties of grapes are: *Worden*, *Martha*, *Prentiss*, and *Moore's Early*.

The *Keiffer* pear is having a hard road to travel, but I am inclined to believe it will become popular for some purposes. Parties who condemned it last season speak more favorably of it this. I certainly think it worthy of further trial. It is good for canning.

Respectfully submitted,

H. K. VICKROY.

The report of G. W. Tindall, of Upper Alton, of Committee on Vegetable Gardening, was read by the Secretary:

VEGETABLE GARDENING.

Mr. President and Members of the Illinois State Horticultural Society:

The year's work is nearly completed, the crops are harvested, and both the soil which yields so bountifully, and the farmer or gardener who has so long been keeping up a constant warfare to produce and secure his crops, may now have a season of rest. While enjoying this peaceful repose, the calculation and preparation for next year's warfare should be going on. Now is the time to decide what should be grown next summer and where you are to grow it. The garden is the most important appendage to many of the substantial comforts and some of the most refined luxuries of human sustenance. Its cultivation furnishes a source of health, pleasure, and economy, which may be enjoyed by every industrious owner of a few rods of ground, who can devote a little time between his hours of business or labor to this delightful employment. If this occupation and the extent of his enclosure will not allow him to indulge his taste for fruit and flowers, he may take much pleasure and derive great profit from the management of the vegetable garden alone. Of all occupations the growing of small fruit, flowers and vegetables is the one which best combines repose and activity. It is not idleness, it is not stagnation, and yet it is perfect quietude. Like all other branches of business, in the growing of small fruits and vegetables there are many disappointments and drawbacks. But even in the most unfavorable seasons there is far more to reward and encourage than to dishearten or discourage. There are but few, if any, days in the year without something to afford tranquil pleasure to them who diligently cultivate the soil.

To gardeners or farmers living convenient to any city, or near any of the great lines of thoroughfares leading into large cities, where high prices may be obtained for all early vegetables, the potato crop commends itself as one which may be profitably grown. When the ground is suitable, or proper manures are applied to make it so, with thorough cultivation good crops may be calculated upon with a great deal of certainty, and if grown so as to come into market early, they furnish pocket money when it is agreeable to have. The past season I planted several new varieties of potatoes to determine the yield and earliness of them compared with the well-known variety, Early Ohio; all making a stronger growth of vines than the Ohio, but no improvement on this variety as regards earliness. The varieties planted were Early Ohio, Early Gem, Early Eclectic, Early Harvest, Early Sunrise, and Lee's Early Favorite.

Few crops pay better in this country than early cabbages when rightly managed. A large portion of the land in Illinois and adjoining States will produce a good crop of cabbage if highly manured and properly cultivated. Twelve thousand good heads of the early varieties may be grown on one acre, which, if sold at five cents each, make a return of six hundred dollars. If you only do half this, three hundred dollars will repay you for all the labor and manure you are likely to expend, and leave a handsome profit. But it is useless to attempt the growing of early cabbage on poor or medium land. Early Wakefield, if true to name, and Winningstadt are my choice for early: Henderson's Early Summer and Brunswick for second early.

Cucumbers, if grown under glass so as to get them in market early, have always paid, but few, excepting professional gardeners, care to undertake the somewhat delicate operation. The growing of cucumbers, like children, require great care until they can run alone. When the season is favorable they may be profitably grown in open ground providing they are started under glass the last week in March or as soon thereafter as the weather will permit. My method for growing them in this locality is to take quart berry boxes, fill them with rich mellow soil, plant six or eight seeds near the surface in each box. Then place the boxes close together in mild hot-beds under glass in a somewhat protected location, filling all vacancies between boxes with soil or sand. Then cover the whole with fine sand half an inch deep so the bed will have a smooth level surface when finished. Water sufficient to keep damp. As soon as plants are up give plenty of air on mild days; if you neglect this they will run up spindling. When they get the first rough leaf thin out to four plants. When they get the second rough leaf they will soon begin to make a shoot in the middle; pinch that out and take sash off all clear, mild days, replacing not later than five in the evening. Let them stand in this bed until cucumbers sown in open ground come up, which will be about the first of May. Then having your hill previously prepared in rich land suitable to their growth, transfer a box and contents to each hill, opening it at the corners, which will be easily done as they will be getting tender. This gives the root a chance to spread more rapidly. They should now be hilled up to first leaf with mellow soil. As soon as they start to grow after being transferred to new quarters, thin each hill to three plants and keep the ground well stirred. Cucumbers, bush squash, and melons may be had a month sooner if grown by this method than those sown in open ground. Early White Spine are best suited for early growing.

I think I have said enough upon this subject, although much more might be said, and I regret that I cannot be with you at your annual meeting, as home affairs demand my constant attention.

All of which is respectfully submitted.

Upper Alton, Dec. 3, 1883. G. W. TINDALL.

H. M. Dunlap, of Committee on Farmers' Horticulture, was not present on the first day when the report was called for, but afterwards made the report here presented:

FARMER'S HORTICULTURE.

BY HENRY M. DUNLAP, SAVOY, ILL.

There would seem to be no subject more interesting to the average farmer than that of a fruit garden and a family orchard. While it is true that nearly all farmers admit the value of fruit to the family, there is no one thing more strikingly neglected about most farms than the setting out and cultivation of fruits, both in the garden and the orchard.

Some go so far as the planting out process, and then, on account of the accumulation of other work, the plants are neglected, and that is the end of the chapter. Weeds spring up and choke, stock break in and trample down, and in the case of orchard trees the singletree of the careless driver finishes the work. Still it cannot be said that such men do not appreciate the fruit itself, for no one can accept from their more painstaking neighbors more quickly the invitation to "send the children over after a mess of berries," or who takes more delight in visiting those whose vineyard, garden and orchard supplies them with fruit the season through.

The fact of this wholesale neglect of fruit culture on the part of farmers is not due to the lack of necessary knowledge nor the uncertainty of fruit culture, but to a lack of capacity and a want of thoroughness on the part of the farmers themselves. So many farmers think it takes so long to get a crop of fruit that they have not the patience to wait even one year. Many men work by the day, week or month, because they have not the ability of planning ahead, nor the capacity to see the returns which would come in in the course of time and doubly reward them for their patience. For this reason they continue to work for others because they can then tell when night comes just what they have earned during the day. To be successful in fruit-raising as well as in business, a man must have some faith in the future, and not expect to plant trees in the spring and harvest his fruit the next autumn as he does his corn. Farmers, let us exercise care in selecting our varieties, in the setting out and cultivation of what we do select, and our reward shall be in proportion to our labors.

It is not necessary in order to raise strawberries for family use that a farmer should have the knowledge and experience of a Parker Earle, or in order to grow successfully an apple orchard to provide fruit for his family that he should be a Hammond or a Whitney. No; if nature has endowed him with a fair sprinkling of common sense he can, with a little inquiry, ascertain the peculiar methods of

planting and cultivation necessary for the different kinds of small fruits and trees. The same care and judgment that he would exercise in the cultivation of his corn crop, and the addition of the hoe when needed, will insure him prompt returns for his labor, and he will be surprised at the ease with which the task was accomplished.

At the same time I do not wish to be understood as saying that to cultivate small fruits for market does not require experience, for it does. But many farmers can successfully raise the fruits without going through a special course of training, and those things which it is very helpful to know will be acquired as he gains experience. It often transpires that men who engage in fruit-growing for the family table become enthusiasts on the subject, and become growers for market.

In planting an apple orchard the varieties should be selected of the best quality and also those most prolific in bearing. Both items should be taken into consideration, for some varieties are so shy of bearing that they are worthless, be the quality of fruit ever so good. Do not set more summer and fall apples than is necessary for the family supply of eating and cooking apples, but winter apples may be planted in larger quantities than is absolutely necessary. When the orchard bears lightly there will be enough, and when a large crop is harvested the surplus, if good varieties and carefully picked, will always bring a fair price. Apples, at the same price as potatoes per bushel, are more remunerative to the farmer, for they require less expense in handling, although most farmers will allow apples to rot before they will sell them at twenty-five cents per bushel. These same farmers often sell their potato crop for that money.

It is not my province to tell how to grow all the kinds of small fruits and orchard trees, for that subject will be covered by the special committees appointed for that purpose. I will offer a few suggestions, and append a list of varieties of fruits that have proven satisfactory for Central (Eastern) Illinois.

In the first place do not seek after some new variety of fruit that no one else has, and which is offered at high prices under equally high sounding names. It is not only the new beginners who are "taken in" by these sharpers, but the "old birds" occasionally get bit. An instance of this kind I will relate. An acquaintance of mine bought several hundred apple trees at forty cents each of a man who recommended them to be very choice, and that they were new — no one else could supply him. This very same variety was in a number of orchards in the vicinity and was bearing, but this man, who was a fruit-grower of fifteen years experience, must have something *better* than his neighbors, and hence insisted on being swindled. Go to your neighbors, find out what does well with them — not one man's experience but many — and then after completing your list, go to some nursery in your vicinity and get what you want at reasonable prices.

Set your orchard trees as far apart as you intend them to stand when fully grown. Don't make the mistake of setting close together with the intention of cutting out when they get too close, for before you are aware your trees have grown together, and you let them stand "just this year" until your orchard is ruined. If planted far enough apart the grass will grow and the pasture can be utilized for hogs, calves or sheep. Small fruits can be set in the orchard if thought desirable, but I prefer to have them in a place by themselves.

Strawberries should be set in rows, three to four feet apart, and from one to two feet in the row.

Raspberries and currants in rows eight feet apart, and four feet in the row.

Blackberries and gooseberries the same as raspberries.

Apple trees should be planted not less than two rods each way.

Pear and peach trees might be set between the apple trees, as they usually die before the apple trees attain a size sufficent to interfere.

I would recommend the following list of fruits for this section of the country:

Strawberries — Crescent, Wilson and Charles Downing.

Raspberries — For red, Turner; Blackcap, Gregg and Mammoth Cluster.

Blackberries — Lawton and Snyder; the latter most hardy and free from rust.

Currants — Large Cherry.

Cherry — Early Richmond on Morello stocks.

Pears — Tyson, Flemish Beauty, Seckle and Sheldon. The Tyson pear has not been known to blight in our locality where it has been planted for twenty years. It ripens about the last of August and is in quality next to the Seckle or Sugar pear. It also is a good bearer.

Apples. —*Summer* — Red Astrachan, Codlin and Benoni.

Fall — Maiden's Blush, Stanard and Snow.

Early Winter — Grimes' Golden, Jonathan.

Winter — Rome Beauty, Rawles' Janet, Minkler and Ben Davis.

It is well to have the Ben Davis in a list for family orchard, for some years they will bear when other varieties fail, and they will do to eat when there is nothing else. When there is a crop of the other varieties the Ben Davis will sell to best advantage.

In place of Bellflower I have substituted Grimes' Golden on account of its better bearing qualities.

The above list is for family use.

Upon motion of Parker Earle it was

Resolved, That this Society recognize its many obligations to the agricultural press of the State for its long-continued services to

all the interests of horticulture, and that we extend the most cordial welcome to the representatives of the *Prairie Farmer*, the *Farmer's Review*, and *The Farmer and Fruit Grower*, now present with us.

It was moved and carried that we adjourn until two o'clock.

THIRD DAY—Afternoon.

The Society was called to order at two o'clock by President Galusha.

Prof. Burrill—If it is in order I would like to call up the matter in relation to the Committee on Experimental Stations.

President Galusha—It is in order.

Prof. Burrill—As this Society will hold another annual meeting before the Legislature again assembles, would it not be better to limit the work of that committee to gathering all accessible information on the subject, to report at our next meeting?

President Galusha—I will suggest that that committee, when appointed, has already been instructed, or their duties defined.

Parker Earle—That was Prof. Burrill's resolution. A motion to reconsider would be in order.

A motion was made, and carried, to reconsider.

Prof. Burrill—I move to amend the resolution by striking out the words "to prepare a memorial to be presented to the legislature."

The amendment prevailed, and the resolution as amended was readopted.

A motion was made and carried that the Chair be authorized and requested to appoint this committee.

The Chair named Prof. Burrill, Prof. Forbes, and Samuel Edwards, as such committee.

Prof. Budd—Allow me to claim your attention, gentlemen, for a few moments. Within the last half hour I have heard of the sudden death of the Hon. J. N. Dixon, of Iowa, to whom I have so often referred during this meeting. On Monday I was with him on

the cars, and left him in his usual health. One hour later he was dead. He was a prominent, enthusiastic, and successful horticulturist, and I cannot tell you how I am shocked by this sad intelligence.

C. N. Dennis — I have often met Mr. Dixon, and know him to be a man of great practical knowledge, and one who did much in the line of experimental horticulture. Those who knew him will feel a deep sense of personal loss in his death.

President Galusha — Many of you knew Cyrus Overman, one of the pioneers of horticulture in this State. An engraving of him was made years ago, and a few copies are left. Any one desiring it can have a copy by giving their address and paying postage.

Prof. Burrill — Several years ago some of us wanted an engraving made of the lamented Flagg, but nothing came of it. I now understand that an engraving has been made for some publication, and suggest that it appear in the next volume of our transactions.

On motion this subject was referred to the Secretary. *(See action of Executive Board.)*

Report of Committee on Gathering and Marketing Fruits and Vegetables, F. M. Doan, Jacksonville, and C. C. Wright, Cobden:

GATHERING AND MARKETING FRUITS AND VEGETABLES.

This subject has been ably and exhaustively treated by many of your essayists in the years gone by, and I fear that I can add but little to your literature that will prove either novel or instructive.

Taking our fruit growers and gardeners as a class, and I fancy the assertion will hardly meet with a denial, that with the successful raising of the products of the orchard or garden their intelligent labor seemed to end, when indeed, as should be the case, all our energies and personal care should be enlisted to insure success. Only eternal diligence will bring to us the just reward of our planting and seeding, and of no less importance is it to understand how to gather, ship, and market their produce.

I shall have to confine myself to fruits entirely, as my experience and interests lie in this direction. The first requirement to acquire success in raising fruit for market is to select the varieties and kinds that are best suited to the locality and to the demands of the most available markets. The second is to plant no more than can properly be taken care of; and the third, is to carefully gather, assort and put in neat packages for shipment or local market. It is

with this last and third requirement that our paper will deal: "Gathering and Marketing of Fruits."

The old adage says "in peace prepare for war," so we begin in April to make up our boxes for the small fruit, using the Halleck box, made in St. Joseph, Michigan — five Swedish two ounce tacks being sufficient for each box. The crates (sixteen quarts), are made at the same time, the boxes being placed in them each day as made, and stored away in lofts. Each quart box and crate are stamped as made. Our boxes are made by our hands, and also by those employed at so much per thousand. For strawberries and blackberries we greatly prefer the trays, as the fruit is far more showy and consequently saleable in them, and then again, the cost is not so great. We paint our trays on the outside a cherry red, and inside a lead color, making them very attractive, and as they are always returned we consider them a good investment.

Our fruit is gathered as early as the dew in the morning will allow, so that, being within one and one-half miles of town, we can get a load to market by eight o'clock in the morning, repeating the operation until the fruit is all gathered, delivered to our local commission merchants, and shipped to our different consignees in the numerous towns adjacent to us. A vigilant oversight is kept over the pickers to see that they pick cleanly and do not pick unripe fruit. Upsetting the boxes is a good way to make them careful, and if unripe fruit is on the bottom of the box, "dock them." In this way the pickers exercise care and judgment, and purchasers soon find that they can rely on the quality of fruit sold under your brand.

A stand is made to receive the fruit as the pickers gather and bring it in, each picker receiving a card designating the number of quarts brought in, and at the close of the day's work, the tickets are taken up, and a receipt given for amount due for day's work; pay-day being Monday afternoons for the preceding week's work.

We keep but little fruit over night, only that we are obliged to ship by the early morning trains. Over-ripe soft berries we never ship, great care being exercised not to send out or market anything that would injure our reputation as reliable growers. The coming season we expect to handle all, or nearly all, our strawberries in trays. The pickers gather them in quart boxes, and when they are brought to the stand they are emptied into trays, and all unripe and defective berries taken out.

One great cause for complaint is the rough usage our express companies' employees give in handing the fruit. They are hammered and jammed around until the juice is fairly made to stain the car and express wagon. No doubt some blame lies at the door of the shipper, for often the address of the consignee is anything but plain. Let us see to it that our crates are plainly marked at end and top, and then insist on careful handling by the common carriers.

Respectfully submitted,

FRANK M. DOAN.

President of State Horticultural Society:

The topic assigned me for your meeting at Bloomington was so fully discussed at a former meeting of your Society that but little more can be said without repeating the main points relating to "Gathering and Marketing Fruits and Vegetables." It is with a great deal of hesitation I attempt to add any words of mine. But as I was "called," will briefly respond.

In the first place we are supposed to have crops to gather and market, and as *profit* is the main point of our effort we should so organize and systematize our plans as to produce the largest returns. I leave the details as to the mode of gathering, style of package, or stage of ripening, to the judgment of each grower, as much depends on distance from market, mode of transit, and the weather. Would always insist on keeping well up with the gathering of perishable fruits, and also on the careful and thorough and clean picking, and honest and uniform packing, of whatever we send to market. We find it is good policy to make two or more grades, indicating, by full name of shipper, with "choice," or "selected," or some word by which our commission man will *know* the quality of the goods and can safely warrant them to his customers as No. 1. The second grade should also be distinctly designated by an understood sign of some sort, and if a third grade is shipped let it be only marked with name of consignee and number of stencil. By doing this the best brand will always find the best customers and best prices, while the others must take their chances with the average stock and be sold on their merits.

The vegetable interest may be more local than general, but as it is on the programme I will briefly allude to some of the leading varieties.

Lettuce, grown under glass, is one of the first in this line, which, with spinach, is shipped in large quantities in strawberry crates. Asparagus is one of the green things that find ready sale. This requires constant attention, and should be cut at surface of ground when six to ten inches in height, washed, sorted, and bunched so that two dozen bunches will fill a third-bushel box. The bunches should be even at both ends, tied twice, and closely packed.

Rhubarb is largely grown in Southern Illinois for distant northern markets, and shipped by car loads. It is shipped in barrels or boxes.

Tomatoes come in the line of perishable goods, and are gathered as soon as they indicate the first approach to ripening, carried to the packing house, assorted, and carefully packed in third-bushel boxes —the riper ones by themselves for near markets, the greener ones for a longer travel, and the greenest for the most distant markets— Buffalo, and even Boston.

Gathering sweet potatoes requires much care in handling to insure long keeping. It should be done here during the first half of

October, on sunny days, trimmed and assorted as fast as dry, and when dry put into bushel boxes and hauled to the potato house, where they should be ranked or corded up in bins to the depth of five or six feet. Fifty thousand bushels, more or less, are put up in this county (Union) for winter and spring sale. Houses properly constructed for keeping out the cold, with heating stoves to control the temperature, which may range from fifty up to sixty degrees, will insure safe keeping. Shipping is done in barrels, lined with heavy paper in the coldest weather, in refrigerator cars.

Now we have our fruits and vegetables "gathered" and carefully prepared for market, and trustingly resign them to the "tender mercies of the wicked" (railroad and express men), to be delivered in their own good time to our agents, the commission men, in the various markets of the north, east, and west.

Here is opened a wide field for consideration and coöperation of shippers in arranging a better system of distribution of our products. The new and increasing facilities for reaching the growing cities of the northwest, and the growing demand and ability to pay for healthful luxuries, would seem to warrant a new departure in the mode of distribution, by which the producer shall receive a fair compensation for his labor. This has been done to a large extent the last season, demonstrating the practicability of loading refrigerator cars with strawberries in their season, and tomatoes also, for Detroit, Cleveland, and Buffalo, with good results. In conclusion, I would suggest the selection of wideawake responsible commission men, and *when* we find them it is always safe to stick to them, and never divide with more than two or three houses in the same market.

Respectfully submitted,

C. C. WRIGHT.

Report of Committee on Florticulture, Mrs. Mary J. Barnard, Manteno, Mrs. Ellen H. G. Smith, Peoria, and F. A. Baller, Bloomington:

FLOWERS.

One day last summer, when calling on a lady friend, I found her among her flower-beds. "Always working among your flowers," was my greeting. In reply she said: "I spend all my leisure moments among them; I never think any bad thoughts when I am working among my flowers." She gave me a new idea — there was a text for a whole sermon in her answer. I never realized before the importance of beautifying our homes; it came to me again in the fall in the exclamation of a lady I had given bulbs and plants to in the spring. It was: "How little it takes to make people happy! We have all enjoyed the flowers you gave us so much, and the children have been delighted with them." Try it, tired mothers; raise

a few flowers. The children will become interested, and will take more than one burden off your hands. They will "think no bad thoughts," watching the tiny buds and leaves unfold. Even the youngest will take an interest, and would never think of molesting mamma's flowers. Some of the pleasantest recollections of my childhood are of birds and flowers. How well I remember thinking that by lying down beside a bed of balsams ("touch-me-nots" we called them then) I could catch one of the beautiful little humming-birds that daily gathered sweets from the flowers.

Beecher says, "Flowers are the sweetest things God ever made and forgot to put a soul into." Flowers! They are among the most beautiful things on earth. This world would indeed be a barren waste if there were no flowers. How drear and lonely everything looks out of doors in winter, when the flowers are all dead. But there are many kinds that we can grow in the house. What is lovelier than a window full of nice plants. 'Tis true they require a great deal of care; still, I think they repay us for all our care in their beauty and fragrance. How lovely the first spring flowers are! The first to break through the frost are the crocus and snow drops. Then hyacinths and lilies of the valley, filling the air with their perfume, and tulips with their gorgeous colors — no flower makes a more showy bed. Then come the annuals; by care and a little trouble we can have a succession of flowers all summer. Flowers! who does not love them?

"The opening bud that lightly swung
Upon the dewy air,
Moved in its very sportiveness
Beneath angelic care;
For pearly fingers gently ope'd
Each curved and painted leaf —
Each tiny leaf became a scroll
Inscribed with holy truth —
A lesson, that around the heart
Should keep the dews of youth.
Bright missals from angelic throngs
In every by-way left,
How were the earth of glory shorn
Were it of flowers bereft.

They tremble on the Alpine height,
The fissured rocks they press —
The desert wild with heat and sand
Shares too their blessedness;
And wheresoe'er the weary heart
Turns in its dim despair,
The meek-eyed blossom upward looks
Inviting it to prayer.
God might have made the earth bring forth
Enough for great and small,
The oak tree and the cedar tree,
Without a flower at all.

Then wherefore had they birth?
* * * * * *
To comfort man, to whisper hope
Whene'er his faith was dim,
For whoso careth for the flowers
Will much more care for him."

Flowers! They are scattered everywhere. When on a visit to the Indian Territory I picked seventeen different varieties of wild flowers in going one-half mile, and when we moved to Illinois twenty-eight years ago, the prairies were one vast flower garden, many of them worthy a place in any garden, but they are fast disappearing. Are any of us trying to preserve those that are worthy for future generations, or do we relegate that to some florist, that by sending to him we can have them returned to us under some big name.

A few years ago Vick advertised quite extensively his "Montana Verbena," "very hardy," price only twenty-five cents for about a dozen seeds. I sent and got a paper; it proved to be just what I already had in my garden that my sister had sent from Kansas, and when I visited her I saw it growing wild all over the prairie.

I see one of our members recommend starting gladiolus bulbs in the hot-beds. My plan has been to plant as early in the spring as the ground would permit, then at intervals of two or three weeks, thus securing a succession of bloom. I think we had them in blossom about three months last summer. Dahlias, asters, verbenas, phloxes drummondi, pansies, in fact, all flowers did well as far as I have observed, when properly cared for, except roses; they were badly winter-killed, and the rose slug tried to take what was left, but by perseverance in applying remedies and picking them off, we succeeded in saving our bushes, and this fall had some splended roses.

And now, in these cold, dreary winter days, the true horticulturist can find many things to employ his leisure moments. There are many preparations for the coming summer that can be attended to at this time, also aiding the good wife in the care of the house plants. Did you ever notice the difference on entering two homes—one where everything is bright and cheerful, and windows filled with lovely plants; the other where everything is dark and gloomy and not a living thing to be seen except the inmates? Need I further draw the picture! Then let us each and every one, fathers as well as mothers, do everything we can to make home what home ought to be, "and our children will rise up and called us blessed."

MRS. M. J. BARNARD.

FLOWER-GROWING.

BY MRS. ELLEN G. SMITH, OF PEORIA.

Eve raised flowers. She also raised Cain. Her descendants have followed her example in both particulars. Cain we can raise without help. To raise flowers we need all the assistance we can get; hence horticultural societies; hence floriculture committees.

Plants do not ask much of us. They only want three things. Give any respectable plant of a well meaning variety dirt, sun and water, and it will give you blossoms.

If you can't or won't supply these three things, go get thee to a dollar store, *buy* flowers of wax, set them on the parlor center table, under a bell-glass, pull down the blinds and turn away "serenely satisfied" in the thought that your floral treasures are laid up where moth and rust will not corrupt, nor thieves steal if they do break through.

Floriculture in this latitude naturally divides itself into two parts: flower-growing out-doors and in.

The first question to be settled in starting to grow flowers out-doors is where to put the flower beds. If you are fortunate enough to have a front yard sufficiently large to give you a pretty bit of green sward in contrast to the gay flower beds, well and good, put them there; but if your husband or wife objects to having a part of the small smooth lawn used for flower beds, don't insist on it. Peace is better than posies. You can put them in the back yard with just as good results, for flowers are true democrats and will bloom as generously on the alley as on the avenue. Where the beds are is of small matter; how they are is most important. The soil in them must be mellow and nutritious. To secure this, spade deep and mix with our virgin black prairie soil or leaf-mold enough sand and compost to make the dirt mellow and porous, so that when you squeeze a little of it up tightly in your hand it will fall to pieces again as soon as you drop it.

If you are unfortunate enough to live in the neighborhood of a brewery, and many of us are, the rotten refuse hops from it, spaded into the flower beds, will be found to make the soil very mellow. They also contain a good deal of food for the plants.

Next comes the question of what to plant, and this depends largely upon individual taste.

Large flower beds are made much prettier by having a border around them. Among plants suitable for bordering are some varieties of low growing coleii, English daisies, golden feverfew, sweet alyssum, so-called, and candy tuft. A few of the coleus plants "kept over," will furnish enough small plants to border a large bed, as the cuttings from them strike root very readily in water or sand kept wet.

Nothing is gained by being in haste to get house-plants into the ground: it is better to leave them in winter quarters till our cold spring winds are over, say till the middle of May in this locality.

Plants are set out in masses of one variety, or two or three kinds are arranged in ribbon style, much oftener than they used to be. In large yards this can be done with fine effect. A half dozen scarlet geraniums planted together will catch the eye and admiration of the passer-by, when, scattered, they would be unnoticed.

Geraniums will give more bloom in proportion to the size of the plant if you can put in the ground young thrifty plants that have been started during the winter or very early spring.

Verbenas I have to buy each season from some florist, as Jack Frost usually nips my seedling verbenas in the bud.

Old Fuchsias will give you the most blossoms, and they can share some partially shaded corner with the pansies.

If there is a spot where the soil is particularly rich, and the sun bright, heliotropes will accept it gratefully.

These house-plants that I have mentioned: geraniums, verbenas, heliotropes, and fuchsias, are those one must have for blossoms, it seems to me, even if only one bed can be had.

The list can be increased indefinitely by adding carnations, tea roses, bouvardias, abutilons, lantanas, hibiscuses, and others.

There is a wonderful variety of bulbs, and tubers, too, that produce lovely foliage or flowers, but as I have had but slight experience with them, I pass them to some one "who knows."

The name of beautiful foliage plants is legion. Very charming effects are possible with these latter to the veriest amateur. For example, alternate rows of mountain-of-snow geranium and some dark coleus gives a very pleasing effect. Some varieties of centaureas, commonly called "dusty millers," in alternation with a dwarf red coxcomb, will be a handsome bed till heavy frosts come, but the coxcomb seeds must be started in the house or hot-bed early in the spring.

The beauty of a foliage bed depends very largely upon the skill with which it is arranged, and gives ample scope for the amateur's ingenuity.

Annuals of endless variety there are that can easily be grown, provided one can obtain good seed. No one kind perhaps yields better results than phlox drummondi, as its colors are many and brilliant, and it flowers so freely. A bed composed entirely of these plants is a "thing of beauty and joy" until there is a killing frost.

The last of July, or first of August, the geranium cuttings that are intended for winter blooming should be rooted. Take these cuttings just below a joint, and from the end of a top shoot if possible. A stocky cutting will make a pretty plant, while a long-jointed slim one will be an awkward, gangling thing always. After taking off all but two or three top leaves put the cuttings in a shallow box or

dish of sand, which must not be allowed to get dry. In two weeks, or a little more, they should be rooted. Put them now into small pots from two to three inches across, and filled with good rich dirt. The plants should be partially shaded, and thoroughly watered after this transplanting.

Verbenas, coleus, fuschias, lantanas, hibiscus, and heliotropes, can be started at this time profitably in the same way.

An easier method, perhaps, to start geraniums, is to cut or break them partially from the stalk, and let them hang there till the break has healed or "cicatrized;" they may then be taken off and put directly into dirt in the small pots; thus saving one handling.

The large-leafed begonias, like begonia rex, can be rooted by pressing a single leaf down on the moist sand. If the leaf is cut down to the mid-rib in two or three places, you will often have as many plants as divisions.

The large plants that are to come into the house during the winter should be taken up a month before it is intended to put them indoors. Nearly everything but coleus plants should be well cut back, put into as small pots as will hold them conveniently, water roots and leaves thoroughly, and set the plants in the shade of a tree or building; leave them there a week or two till the roots are "settled," when they may have less water and more sun. If tea roses are put in the ground they may stay there until the middle of September or October, and when potted be left under the shade of a tree, watering as needed for a month, or till the ground begins to freeze at night. Then bring them in, and by the middle of December they will begin to bloom.

So much for plants in the yard. I know by sad experience, however, that in town lots it often happens that you cannot put a flower bed in the front yard, for the children must have a place to play, and you cannot put it in the back yard, for the washings must be dried. There's always "room at the top," you know, and if we can't have "ground floor," we'll just put our flower bed into a box and move it up to a window ledge or balcony. One of the prettiest things I saw last summer was a flower-trained balcony in Minneapolis. There seemed to be a box about a foot in width and the same in depth, around three sides of the balcony, which fronted east. In this box were planted just three kinds of drooping flowers, viz: nasturtiums, or tropæolums, if you will, lobelia, and sweet alyssum, or candy tuft. I could not tell which from the street.

We were admiring this brilliant cornice of yellow-red, blue, and white, from the opposite veranda of my friend, when one of our party, a gentleman, said: "Yes, it is handsome, but the plants bloom so well I'll warrant there is a professional gardener to take care of them." "No there is n't!" said my friend. "The lady of the house and her daughter take care of them, and do all their own work beside." I mentally tallied one for amateurs.

If you can, let a few morning glories run over your back porch or fence, and near by have a bed of the old-fashioned flowers, such as garden pinks, golden coreopsis, sweet peas, ragged ladies, bachelor's buttons, bouncing Bettys, and four-o'clocks.

They hold more memories for us than the more showy annuals that have crowded them out. They take us back to the days when the *fragrance* of the roses of life was with us, but we knew of the *thorns* only by hearsay.

When the plants are brought into the house give them as good a light as you can afford. If there is but one sunny window in the house, however, don't fill it with plants. The family is of more importance than the flowers.

"Eternal vigilance" is more truly the price of blossoms indoors than out, especially in the dwelling house. The green fly is the most common enemy. To get rid of it, steep tobacco stems in water until the liquid is the color of strong tea, then dip the plants in it if they are small; apply it thoroughly with a florist's syringe if they are large. Tobacco tea will also kill worms in the pots, if the plants are watered with it. Tobacco stems can be obtained for a trifle from any cigar maker.

Water your plants, except callas, when the earth in the pots begins to look and feel dry. We amateurs are apt to water too often. Our plants no more need to drink all the time than we do. In winter, too, like ourselves, they are partial to warm drinks.

It is a good thing for all house plants, especially callas, to cover the tops of the pots with packing moss. If you can mix with it a little bone-dust — one part by weight of dust to thirty of moss, Henderson says — so much the better. Plants so treated need not be watered so often, nor so soon shifted to larger pots.

If the bone-dust is not easily obtainable, liquid manures made from ordinary compost may be substituted. Make a leach with an old pail or barrel, according to your needs. To water your plants with this is not a dainty operation; but never mind, in the wonderful laboratories of root and branch that cunning chemist, the sap, will transform the malodorous liquid, and give it back to you in the shape of brilliant blossom, or in the delicate perfume of rose or heliotrope.

I know of but two varieties of plants that can be propagated better in winter than at any other time. These are carnations and tea roses. When your tea roses bloom in winter cut off a half-open rose with suitable stem, say three inches long, then take off a cutting just below where the rose was cut.

To get a carnation slip, take hold at the end of a shoot with one hand, and three inches further back take hold with the other, and pull till the shoot unjoints. Snip off the ends of the leaves of the disjoined piece and treat like any other cutting.

In short, if you don't like flowers don't try to cultivate them because other people do, but if the care of them is a pleasure to you, do grow them, and such varieties as your own taste dictates, even if some prim neighbor is astonished at "your taste."

FLORICULTURE.

Mr. President and Members:

Being called upon for an article on Floriculture, I would say that the field is a pretty large one and I find it constantly changing. A few years ago the demand was mostly, if not entirely, for plants, and most florists carried a general assortment of them, and published catalogues that were circulated all over the country with good results. Latterly the demand has fallen off and but few retail catalogues are now sent out, and I find the same state of affairs exists East as well as West. One reason of this, I think, is the general knowledge in regard to propagating the commoner class of plants, geraniums, fuchias, etc., and the general use of base-burning stoves and heaters will insure a steady genial atmosphere through the coldest weather.

Now the demand is for cut flowers mostly, and we have to adapt our greenhouses to the growth and blooming of monthly roses, mostly teas, also carnations, bouvardias, heliotropes, violets, camellias, primulas, lilies, etc., with a growing demand. Prices at times rule low and there is some waste, but generally a market can be found for them in Chicago and other large cities. The outlook is fairly prosperous, as the wealthy and refined people all patronize the florist, and I think you will agree with me in saying that for funerals, weddings, or as a present to a sick friend, there is nothing more appropriate, or a truer indication of refinement and culture, than the use of fragrant, beautiful flowers. All honor to our American people in this direction, as I know of no country where the practice is more universal or more generally followed.

In regard to plants, I think great improvement can be made in growing them by the use of tile sash, and I look forward to the time when the building of the better class of houses will include at least a bay window on the south or east side. This would enable ladies, and even children, to cultivate and enjoy growing, and even blooming, plants all winter. This would prove a very pleasant and enjoyable feature in every home, and tend not a little to the love of home and horticultural pursuits in our rigorous winter climate.

Another change I would notice is in the propagation of roses. Many people now prefer budded roses, as it is almost impossible to have strong, vigorous plants of the finer class in any other way, as the bud blooms are almost always slender growers, and have not con-

stitution enough to stand our cold winters and hot summers, and by planting a little below the bud there is not much danger of suckers choking out the bud, and again they can be readily discovered and rubbed off, should they make their appearance. The manettia is the stock mostly used, though seven sisters and Wm. Banksia answers finely for choice tender teas. F. A. BALLER.

Report of Committee on Utilizing Fruits, G. W. Hilliard, Brighton, and J. S. Rodgers, Marengo:

UTILIZING OF FRUIT.

In this age of hurry and progress of what use is it to spend so much time in learning how best to grow large quantities of fruit, if we do not also learn how to best utilize the crop that it may net us the most dollars and cents?

Even our comparatively slow-going ancestors, dating as far back as Father Adam and Mother Eve, took care to make use of as much as possible of the products of Eden. We may be thankful that the mistakes of our forefathers have been made a part of history, to warn us to be cautious.

Though it may not be possible for us to fall into such serious error, involving so great loss as did our first parents in the disposition of our fruit, yet it will pay us to consider well the subject and let the experience of our parents, their successes and failures, influence us in our management of future crops.

Among the successful methods of utilizing fruit now in practice may be mentioned, first, marketing the best, then evaporating, making jelly, canning, making cider and vinegar, and feeding to stock.

In a county like ours, which is capable of producing such enormous crops of fruit, it would be simply a suicidal policy to rush our product on the market as fast as matured. Such a system has so often been attempted that you are well aware of the consequences: markets overstocked, commission men write to you to "hold back shipments," "fruit a drug," "selling to peddlers for enough to pay charges or less." Such experiences naturally lead us to seek other methods of utilizing our fruit.

Making jelly, evaporating and canning are comparatively new, but have already grown to large proportions, and are rapidly utilizing a large share of our surplus fruits, and yielding a fair profit for capital and labor invested, but not having had any experience with them I will confine myself to ways with which I am more familiar, and give you in a few words my plan of disposing of fruit.

As I have quit growing fruit for market, except apples, I shall speak only of that variety. The early kinds I deem unfit subjects

for cider or vinegar, consequently I gather all the best specimens and send to market, the remainder are fed to stock. As the fall or more solid varieties mature, I start my cider-mill and make them into vinegar, for which I always find quick sale at sixteen to eighteen cents per gallon, barrel included. I cannot say there is much profit in strictly pure cider vinegar at that figure, made in my way, for I have no short process, but simply put the juice into good tight barrels, filling them about three-fourths full and piling them two or three tiers high in a shed or outhouse, where they are allowed to remain through the winter and next summer with the bung out, and a small cloth tacked over the hole to keep out insects and dust. The barrels not being full gives room for expansion by freezing, which does the vinegar no harm.

During the following autumn it is racked off and put into cellar, where it will be ready to fill orders with during the winter. I have tried putting into tanks, holding from fifty to one hundred barrels, but with unsatisfactory results, for such large bodies of juice require to be agitated frequently during the summer months, so as to expose it as much as possible to light and air, causing it to sour more rapidly, but it usually happens that at the time this should be done there are so many other things on the farm that demand prompt attention that the vinegar is neglected. And while other vinegar can be manufactured in twenty-four hours and sold for seven to ten cents per gallon, I must confess I see very little encouragement for the producer of strictly pure cider vinegar.

There is a movement now on foot, with fair prospect of success, among the cider and cider vinegar makers of the United States, to have the Whisky Vinegar Law of 1879 repealed by Congress at its next session. Should that be done we may expect better prices for our cider vinegar.

I now come to the method of utilizing fruit by making into cider. This I have been familiar with for more than thirty years. I well remember the time when my father bought a little hand cider-mill which had a capacity of from one to two barrels per day, with two men to handle it, and when twelve to fifteen barrels of cider made in one year was looked upon as a large stock. But that time has long passed away, and rapid progress made in the production of cider-making machinery has brought us to the present, when we turn out daily from twenty-five to forty barrels, and store away in cellars for winter and spring trade from five hundred to one thousand barrels, which finds ready sale at fifteen to eighteen cents per gallon, packages extra. I now make my whole crop of late apples into cider, not sending a barrel to market, also buying all the good cider apples I can get at forty to fifty cents per barrel delivered at my mill. The apples are kept in bins as long as the weather will permit, thus allowing them to ripen and make a richer quality of cider. They are then run through a grater and pressed out immedi-

ately, the juice being put into fresh whisky, or still better, highwine barrels. It is then put into the cellar and allowed to ferment a few days, then bunged up tight and kept from the air as much as possible. After two or three weeks it will have become still and settled, and may be racked by a syphon hose into a clean barrel, at the same time adding a small quantity of antiseptic to prevent further fermentation and springing of casks when in transit. It is now allowed to remain still until April (if not sold before), when it is again racked off and barrels cleaned. Then it is allowed to remain until wanted to ship, when it is always racked before moving.

It being a standard rule with all productions that the best material makes the best goods, so it is with cider. If you wish to produce a choice article you must have good material to make it from.

Now, in conclusion, I wish to say that of all the various ways I have tried to utilize the fruit of the apple-tree, my experience has been that the most satisfactory results have come from the making of a choice article of cider.

Respectfully submitted,

G. W. HILLIARD.

Prof. Budd — What are the antiseptics you use?

G. W. Hilliard — I use Shaw's antiseptic and salicylic acid.

Brof. Budd — The question has frequently been asked me, What is salicylic acid? Its name, from Salix, the generic name of the willow, indicates its origin. It is obtained from the bark of many species of willow, and some species of poplar also, and is a powerful antiseptic and entirely harmless. When in London I saw tissue paper which had been soaked in a saturated solution of salicylic acid used to wrap up apples and tomatoes for shipment.

J. M. Pearson — Is not fifty cents per bushel more than you can afford to pay for cider apples?

G. W. Hilliard — I have usually paid forty cents per barrel, but this season paid fifty.

H. Augustine — What is the law of '79 to which you refer?

G. W. Hilliard — It relates to the manufacture of alcoholic vinegar, and opens the door to frauds.

Question — Do you make any use of the pomace?

Answer — I spread it upon my corn-land with a Kemp's manure spreader.

Question — Do you save the seed?

Answer — No. Have no convenience of water for washing.

J. M. Pearson — Is not the cheap vinegar made by the crooked distillers less hurtful than the cheap mineral acid vinegar? And has not this pernicious acid vinegar hurt your cider vinegar business more than the other kind?

Answer — Yes; the great amount of this acid vinegar made, and its cheapness, is driving cider vinegar out of the market.

Hon. S. H. West — Cannot this Society take some action that would help to drive out of the market these adulterated and poisonous articles of diet? I look upon this adulteration of food as a very serious matter, and hope some measures will soon be taken by the proper authorities to prevent it.

G. W. Hilliard — There are hundreds of thousands of dollars worth of fruit lost every year that would be manufactured into vinegar if the market was not flooded with these compounds.

Prof. Budd — We have been at work upon this question in Iowa for several years, but found it an uphill business. No other country in the world permits such adulteration of food. It is a standing saying in Europe that adultered articles that cannot find consumers at home are sent to America.

J. M. Pearson — Should hogs be allowed to run in the orchard?

S. G. Minkler — There is no danger of hogs injuring a large orchard.

Mr. Robison — If the field is large enough, and the hogs small enough, and few enough, pasturing with hogs may do no harm. Trees are often injured by being rubbed by hogs. As insect destroyers hogs have been over-rated, I think. They will not stay up at night to catch insects.

J. M. Pearson — We have recommended that hogs be allowed to run in the orchard. It does the hogs good, but does it injure the trees? I think not. My plan has been to grow corn first, while the trees are small, then clover, and then turn in the hogs — one or two hogs to the acre. I do not put the ring in the nose, but say, root, hog. And they have not hurt my trees a particle, I think. Trees shed the bark annually, and the rubbing does not seem to harm

them. Another point made is, that they sometimes dig under the roots, but I have found this true only in isolated cases. Mr. Gorman tells me that our orchards are less troubled with insects than those in Southern Illinois or in the Warsaw district; may not our pasturing with hogs account for it.

G. W. Hilliard — I feel like using Prof. Budd's language, and saying I know the hogs do injure the orchard. In hot weather they will root under and lie around the trees and seriously hurt them.

A. Bryant — Mr. Pearson keeps only one or two hogs to the acre, and others who complain of injury, probably a great many more. Too many hogs in an orchard will bark and kill the trees.

H. J. Ludlow — I have pastured young orchards with sheep, and had very few codlin moths.

Dr. Sanborn — I am no friend of the hog. Do not believe his flesh fit for human food; but he may be turned to good account sometimes. A gentleman in my vicinity has a plum orchard of three hundred trees, which were unproductive until he put in hogs in sufficient numbers to keep the ground trodden hard. Since pasturing with the hogs he always has excellent plums and large crops.

Col. Fulkerson — I can corroborate the Doctor on that point. It is a success to put hogs in the plum orchard. I have not failed to get large crops of plums since pasturing the orchard with hogs.

J. M. Pearson — I would like to ask members what has been their experience with dryers. We had one in our vicinity, but did not make any money out of it. The supply of fruit was not constant.

G. W. Hilliard — Has any one had experience in manufacturing apple jelly?

S. M. Slade — I move that Mr. H. J. Ludlow, of Minnesota, who is present, be made an honorary member of this Society. Motion carried.

H. J. Ludlow — I am glad to have the pleasure of meeting with this Society, and thank you for your words of welcome. I have for several years been engaged in fruit growing in the southwestern part of Minnesota. I find some varieties of apples profitable, particularly Wealthy, Tetofsky, Duchess, and a seedling that is very promising. This seedling and Wealthy have never lost a bud by frost. Grapes, blackberries, and strawberries all grow and produce well.

The transactions of the Executive Board, July meeting, held at Bloomington, were called for by Mr. Pearson, and read by the Secretary. *(See index.)*

J. M. Pearson — Will some one present give us further information. I would like to know how it panned out.

A. C. Hammond — The Board placed $150 at the disposal of the State Board of Agriculture (the Board added $50), to be offered as three special premiums for largest and best display of fruit. These premiums brought out the finest exhibition of fruit ever made at the State Fair; but whether it was of sufficient benefit to this Society to warrant the outlay is the question we must decide.

J. M. Pearson — I would like to hear members of the Society express their views about holding an exhibition of fruit at the next annual meeting.

Samuel Edwards — It was my pleasure to act as one of the awarding committee on the special fruit exhibits at the last State Fair, and I must say that the display was a fine one, and the money invested by this Society was well spent. I think the Board should be liberal in this direction, and I most heartily favor the measure proposed by our president-elect.

Milo Barnard — In addition to regular premiums I should like to see liberal ones offered for new fruits. It might be the means of bringing out something valuable.

A. Bryant — I think it will be a good plan to have an exhibition of fruit at our next winter meeting. I do not think any one will object.

Mr. Robison — We have had some profitable exhibitions of fruit, and I shall be glad to see a display next winter — especially of everything new.

H. Mortimer — I think a display of fruit will be of special advantage. There is a great variety of fruit grown in the different sections of the State, and it will be very interesting to orchardists to have it exhibited together.

S. G. Minkler — I favor a display of this kind, and think it will make more people come to our meeting.

D. B. Wier — I hope the Society will pay liberal premiums and stimulate competition. I should be glad to have the Society exhibit at the State Fair; such exhibitions please as well as educate the people.

It was moved and carried that when we adjourn it be *sine die.*

Samuel Edwards — I propose that we devote a few of the moments still at our disposal to the discussion of vegetables. I would like to call attention especially to some of the newer varieties I have tested. Will first name the Perfect Gem squash, which possesses excellent qualities. It is thin skinned, fine grained, sweet and of rich flavor, a free grower and very productive. With me it has been rather deficient in seeds. I should like to know what has been the experience of others who have raised it. The Surprise muskmelon is another rather new thing which I can recommend highly. It is early, prolific, and one of the finest flavored melons I ever ate.

E. A. Riehl — I can corroborate all that has been said by Mr. Edwards in praise of the Surprise muskmelon and Perfect Gem squash, and in answer to a question just asked me, will say the Ice Cream is the best watermelon, not to ship, but for home use or near market.

Samuel Edwards — I consider it every man's christian duty to supply his family with plenty of fruits and vegetables. We read in the Book, "Man doth not live by bread only." Like the doctor here, I never eat the flesh of the pig — my diet is mostly vegetables and fruits.

O. W. Barnard — I heartily indorse all that has been said on this subject. We do not, many of us, appreciate the value and importance of vegetables to the farmer and to everybody.

Dr. Sanborn — When looking over the reports of this Society I have often wondered why they did not contain more reports and discussions on vegetables. By giving more encouragement to this branch of horticulture great good might be done.

H. Mortimer — Can anyone give a remedy for the cabbage worm?

Samuel Edwards — Water from a coal-oil barrel sprinkled upon the plants, it is said, has proved effectual.

Dr. Sanborn — I tried an experiment which was successful. Took a teaspoonful of Paris green and tritulated with a bucketful of road dust, and applied to the plants when the dew was on.

H. Mortimer — I think great caution should be used in recommending such a deadly poison. Several of my neighbors have used a solution of alum with tolerable success.

J. M. Pearson — I have tried Paris green which was at first successful, but afterward a failure, or a partial failure. I never experienced any bad effects from its use. The cabbage is a plant that developes from the inside, and I do not think there is any danger if the cabbage is properly prepared for the table.

FINAL RESOLUTIONS.

Committee on Final Resolutions respectfully report that the thanks of the State Horticultural Society are due and are hereby tendered to the citizens of Bloomington and vicinity for many attentions and courtesies received from them during our session; to the hotels of the city for reduced rates; to officers and members; to the officers of the Chicago and Alton; Illinois Central; Indianapolis, Bloomington and Western; Chicago, Burlington and Quincy; Wabash and Pacific; and Cincinnati and St. Louis Railroad Companies, for reduced rates to members; to the retiring officers and members of the Executive Board for their labors to make the meeting so interesting and successful.

JOHN M. PEARSON,
W. T. NELSON,
L. C. FRANCIS.
Committee.

Parker Earle — The World's Fair, which opens at New Orleans the first of next December, is making an unusual effort to have a very large and interesting fruit exhibition. Premiums of a liberal nature will be offered, and I hope that this Society will compete for them. This exhibition is chartered by Congress, and the managers are making preparations for the largest horticultural exhibition ever made. We should therefore encourage them by making the best possible display. I think you will there see fruit from almost every country on the globe, and such a display cannot fail to be of the greatest interest to fruit-growers. The premiums will range from $5.00 to $300.00. The entire management of this department will be under the control of the Mississippi Valley Horticultural Society.

C. H. Dennis — I move that this question be referred to the Executive Board, and that we now adjourn.

Motion carried.

MISCELLANEOUS OR DEFERRED PAPERS.

LIFE AND DEATH OF HORTICULTURAL SOCIETIES.

BY VICE-PRESIDENT MILO BARNARD.

Now that horticultural organizations have become the medium or highway through which the knowledge gained by amateurs and professionals reaches the general public, the words I have chosen for my text are fraught with untold meaning and importance; for when we ascertain the secret of success in the organization and management of horticultural societies, and expose the cause of rottenness and decay so often witnessed in associations of this kind, we will have made one grand movement toward universal knowledge on this all-important subject of horticulture; for it is a fact apparent to all observing minds, that where a live, progressive society exists, there horticultural knowledge and horticultural products abound, and the standard of morals, intelligence, refinement, and taste is much higher than in localities where individual effort only is exerted in this direction, which is conclusive proof of the useful and disseminating power of organizations.

I have been led to reflect upon this matter by various remarks made by members of the State Society touching its longevity and vitality. It seems to be a foregone conclusion, with some at least, that the days of this Society are numbered, that its end draweth nigh, its life-blood is slowly but surely receding from the extremities, that its feet and hands are growing cold, and that death will soon claim the old pioneer, that the grim messenger is even now knocking at the door seeking admission to our councils. And at former meetings the excuse for absence on the part of some members was that they could not bear to be in at the death,— could not witness the death throes of the good old Society. Now, with due regard and reverence for the feelings of those fathers in horticulture, I must beg leave to differ with them. I will not say that the days of this Society, as now organized, may not be numbered. This may all be true, for change is a universal law of nature. But I *will* say that a deep interest in horticultural matters, and organizations of *some* kind for the furtherance of the cause, will not soon fade

from the earth, but will endure while time lasts, unless the human race should again sink into benighted barbarism.

Now I suspect this dark and gloomy picture of the future of our Society is caused mainly by the color of the glasses through which we are looking. Is it not ourselves who are growing old, nearing the valley and the shadow? Does not the consciousness that we are fast ripening for the sickle cause us to see, or think we see, a finished appearance to all things that we have helped to organize or been intimately connected with? This, to a certain extent at least, seems to be the tendency of the human mind, and it is not strange that those old men, now fast dropping out of line, who assisted in the organization of the State Society, think when its control passes from their hands its career of usefulness will end in death; and a discouraged tired feeling seems at times to pervade our deliberations, and a what-is-the-use feeling seems to possess many members and finds expression in talk and essays.

Now because we have not achieved the grand success our sanguine youth pictured to our ambitious minds, or because we have feasted on fruit and flowers until we are satiated, or by reason of old age and poor digestion have lost a portion of the interest we once felt in these matters, is no reason we should discourage others by our complainings and sombre forboding of the evil days that are in store for us. Why should we so soon forget the early days of our horticultural life—days when we watched with such a keen and absorbing interest the expanding leaf, the unfolding flower, and the development of the fruit? With what anxious care and solicitude we marked the unrolling of the canna leaf, or measured the gigantic caladium, and waited day by day with feverish impatience to behold the bloom on the novelties in the flower garden. Now because we do not enjoy this care, labor, and communion with nature as we once did, shall we say *what is the use?* it does not pay. Is there nothing that pays except what we can wring dollars out of? I tell you there are many things in horticulture that pay big from which no golden dollars can ever be extracted.

It is undoubtedly true that horticultural societies, like everything else, have their ups and downs, their childhood, youth, middle age, and the "sear and yellow leaf." Some die in infancy, others in middle age, while others live and flourish for ages. Why this difference? Some are organized, and for want of a leader, or one to take the burden upon his shoulders and bear it onward, the society soon becomes a thing of the past. Others more fortunate, have one or two who take a deep interest in the matter, working in season and out, with energy and pluck, and manage to keep vitality in the organization for many years. But to have a good, lively, wide-awake society there should be at least a score of working members, with plenty of reserve force for great occasions and to furnish the needful for running expenses. And this is the kind that attain great age and usefulness.

I know it is much easier to point out the failures and shortcomings of societies than to suggest a better way. But I am convinced that one cause of failure and death of many, and the low vitality in others, is because they are run mostly by men, and a large majority of the members are past the meridian of life, as though the quiet peaceful pursuit of gardening fruit and forest growing has attractions to soothe and tranquilize the spirit of man after the mad scramble for wealth and power that has absorbed the better part of his life and manhood. With this I find no fault, and am glad the business-tossed wayfarer has a haven to repair to where he can spend the evening of his days amid the sylvan shades of rural life. But this exclusiveness in the horticultural society business is what I am making war upon. Women are justly entitled to take part, and an equal part, in all the business transactions of our societies. She certainly bears her share of the burdens of the practical part of our calling, especially in the finer and more ornamental departments, and in fruits and vegetables consumed in the family, who so intimately acquainted with their good or bad qualities as our mothers, wives and daughters? And what society, with the exception of some of the secret organizations, has ever, or can ever succeed without the help of woman?

And many of our societies are ignoring a present and future element of success, power and usefulness, in not giving more encouragement to the rising generation to come among us, and help us in our society work as well as in the practical work of horticulture. Is it not fitting that young men and maidens should join us in discussing matters pertaining to gardening and fruit growing, for nobody devours the juicy luscious fruits and toothsome garden products with the keen relish as does Young America. I have known this hungering and longing for these things so strong and overpowering in boys that they would travel many miles, even in the dark hours of night, to visit an orchard or melon patch to satisfy this natural craving. Now let us invite them to come to our meetings and encourage them to participate in our proceedings, and we will teach them to grow their own fruit and melons, so the hours of rest may be devoted to sleep instead of foraging. Let us teach them that horticultural knowledge is not inherited, but must be acquired, and although the oldest vocation of man, is ever new; for the Goddess Pomona, in her annual journey around the earth, awakens into renewed life and activity the dormant forces of horticulture by the power of her magic wand.

Try to make them understand that no one is or ever will become perfect in the science and art of horticulture; that the more we learn of Nature's truths in the prosecution of our beautiful and loved calling, the more we see there is to learn, reaching onward and upward; and that we form societies, not because we know so much of horticulture, but because we know so little, and that we wish to

avail ourselves of the experience of others to increase our knowledge faster than we can by individual effort and experiment. By this means we will make our meetings more interesting, extend their field of usefulness, infuse more life and vitality into societies, and by the transfusion of new blood into the veins of our old organizations, give them a new lease of life.

Let us remember that the boys and girls of to-day will be the men and women of to-morrow, and the whole weight and responsibility of sustaining and running our institutions, from the vast government machinery down to the smallest horticultural society or farmer's club, will rest upon their shoulders. Let us, then, show them by our actions and our teachings that we realize the situation, and will do our part toward fitting and preparing them for their new and responsible duties. Say to them that our institutions are not going to die when we pass from this stage of action, neither will we take them with us, but will transmit them to you unimpaired and in good running order. Take them as a sacred trust from our feeble and shaking hands, ever striving to bear aloft the standard that we have labored to uplift. And remember, that so long as trees bud, flowers bloom, and the vine yields her fruitage, there will be need of association among those who are engaged in coaxing from Mother Earth her choicest blessings. Then when we feel the stealthy tread of age stealing upon us we can, without doing violence to our self-respect, dignity, or pride, gracefully surrender the leading parts into hands that we have trained, and retire to the peaceful quiet of home life; and as we serenely repose beneath the shade of the Eden of our own planting, with calmness beholding our life's sun as it nears the horizon, shedding a flood of light far over the landscape, may we be able to discern in the front ranks of the world's army of laborers those who have taken our places, striking sturdy blows at the impediments which impeded our progress, and if they succeed in surmounting obstacles that baffled us, let us not be envious, but rejoice at their grand success, and in the language of the poet,

> "Draw the drapery of our couch about us,
> And lie down to pleasant dreams."

In compliance with the request of the Secretary, Rev. G. W. Minier kindly contributed the following interesting paper on

PLANTING AND CONSERVATION OF FORESTS.

Mr. President and Members of the Illinois Horticultural Society:

The planting of forest trees in Illinois, and indeed, in the United States, must be a voluntary effort on the part of the owners and proprietors of our farms. Happily we have no coercive force in our country which can reach the personal and pecuniary interests of the

people. Our only resort, therefore, is to welfare of country. Of the utility of forests we are slow to learn, and the once fertile but now barren countries of the Old World speak to us in vain. Our own Eastern States are bearing testimony in favor of forest planting which may awaken more attention.

In the first settlement of these states thinking men were contriving how to get rid of the surplus timber. The axe and the fire were in requisition at that time. Thinking men are now more anxiously inquiring how we may arrest this destruction and devastation.

In the Prairie States tree planting has been fostered from the beginning of settlements. As we cannot hope for aid from the state or national treasury we propose that farmers be induced to help themselves.

A country so beautiful by nature, so prolific in all the essentials of human necessities, as is our own beautiful State of Illinois, is, perhaps, not found in the wide range of the great republic.

Mr. President, can we do our State any greater service, in a material way, than to commend and foster the planting of fruit, ornamental and forest trees? Let tree planting become a part of our farm literature; let it become a subject of conversation in our family and social circles—a subject of debate in literary societies; let it permeate all ranks and conditions of men till it becomes a blessed contagion.

Every one will, in all probability, have his favorite variety for planting; whatever it may be let it be indigenous. Treat all foreigners (exotics) with due respect and courtesy, but stick to your known friends.

I would like to call attention to a few names without the consent of the owners. There is one J. W. Fell, whom some of you may remember, one Samuel Edwards, and one Robert Douglas, more worthy of being remembered than he of the Grampian Hills, and many others. These men have erected their own monuments in the shape of spiral firs and beauteous groves. Let us emulate their worthy example.

It may not be generally known that we have a statute in Illinois (thanks to that grand old farmer, Willard C. Flagg) granting every land owner the privilege of using six feet of land on our road sides for ornamental tree planting. If every farmer will avail himself of this privilege our rural districts would soon vie with our cities, towns, and villages in ornamentation. These may and should be of some useful varieties, so that when decay, misfortune, or age shall come upon them they may be made to minister to the wants of man.

Our national legislature may aid us a little, and now, as the speaker of the House of Representatives is not bound hand and foot with that vicious web, the tariff, may we not reasonably hope that the tax on lumber from Canada will be removed?

I will say nothing on the necessity of forests for windbreaks, for moisture, for the modifying of our climate, for useful and necessary timber supply. Such thoughts as these are not needed in this convention, and those who are absorbed in the mere making of money, that they deform the natural beauty which the Divine Architect has so bountifully given, are incorrigible, and like the brethren of the rich man in the Scriptures, would not believe though one should rise from the dead.

The forest greets me when we meet,
Waving in the place I set them;
"Time, you thief, you love to get"
Good things in your list. Put that in.

G. W. MINIER.

MIGRATORY BIRDS.

BY A. L. CUMMINGS.

Comparatively few varieties of birds are commonly seen in the same places throughout the year. They come and go with the seasons with great regularity, and if seen later or earlier than usual it occasions surprise. The crows, the bluejay, some species of owls and our common game birds are exceptions. I believe the titmice and nuthatches are considered non-migratory by most authors; yet as they are rarely seen in summer in this latitude (42½° north), I am inclined to think they travel northward in summer as a rule, and return with the autumn frosts. I have been told in explanation of their summer absence that they leave the towns and open country during the nesting season for the seclusion of the forests; that their shyness and the ease with which they hide themselves in the foliage is the reason why they are seldom seen during summer. Do they also reverse nature's law by preserving silence during the period of love-making, and singing only at seasons when other birds are mostly silent? I am not satisfied by such reasoning, and prefer to think that very few of them remain here during the summer. They could find food in the forests in winter as well as in the orchards and shelter belts of our farmsteads, or the shade trees and shrubbery attached to city and village houses, and would not be likely to change their habits and localities without just cause.

Their presence in large numbers in winter, together with their merry music, is the most cheerful feature of the season. They come with the snow birds, or but a little before them, and are social enough with them to belong to the same family. They come about the time our robins and blue-birds fly southward for the winter. They are not governed by the calendar nor yet by the thermometer in their flight. It is simply wonderful by what hidden telegraphy they are summoned hither and thither. Sometimes their flight is

delayed until after the first autumn snows; sometimes weeks of pleasant sunny weather follow their flight. Then follow from the northward other familiar visitors. Whole flocks of purple finches, pine grossbeaks, Bohemian waxwings, with other northern birds, seeking the scarlet mountain-ash berries and weed seeds from our prairies and marshes. If the forage be plentiful and the weather propitious these remain through the winter; if otherwise, they pass on farther southward in their turn, where the conditions of life are more favorable. Thus the winter passes and we look once more for their return in the reverse order of their going. The last are first and the first last. Those that left in November will return early in March, while those that left in August or early in September, will linger under tropical skies until late May or early June before returning to us. They use this northern clime for a summer resort, as one goes to the seashore during the hot months. Yet they manage to crowd into three or four months not only all their love-making and honey-mooning, but also all the serious work and business of the year, the constructing of the home, the rearing of the family, and all the duties they owe to their kind, and then off again for the tropics for eight or nine months of frolicsome delight or luxurious ease. It does seem strange that all the business of the year should be crowded into so small a space of time, but the fact remains unquestioned.

Notwithstanding the unusual severity of last winter our birds returned a little earlier than usual. Bluebirds were here on the first of March, and I noticed on the third of March a female bluebird trying to squeeze herself into a hollow walnut knot in search of a safe and cosy resting place, while the male was flying from tree to tree with merry twitterings, followed by a small flock of snow-birds — a very unusual combination.

By the way, what rarely social fellows these snow-birds are. They keep company with sparrows, finches, nuthatches or titmice, and seldom refuse any company that offers. They are often seen in flocks of fifty to a hundred birds, mainly of their own kind, but including several others, especially lively and wide-awake in the face of an approaching snow storm, the most depressing circumstances seeming to make them, like Mark Tapley, "uncommon jolly."

Robins came this year on the second day of March and bore the severe weather that followed like heroes. Their "cheer up, cheer up," relieved many a clear frosty morning of its chilliness, for who can doubt its being spring when we hear the robins singing. Later in the season our particular robin built his nest on a low Norway spruce limb, about fifteen feet from our front door, and raised two successive broods in the same nest, Mrs. Robin not even asking to have the walls repapered. Then the same brave pair built a new nest in a neighboring tree, where their third brood of the season was successfully reared. It was better than any circus to see the patriarch

strutting at the head of his three broods before starting for his Southern Canaan.

The severe winter did not seem to have diminished the number of birds, and in fact they were more plentiful than for many previous seasons. About the second of April came a noisy colony of blackbirds and commenced their annual fight for the possession of a tall larch tree on the premises. They have been ignominiously driven off each successive year for five years; yet each season they renew their claim as persistently as if each defeat had been a victory. April 26th came the swallows and swifts, flying high through the air for insects, and twittering noisily. On the 29th the brown thrushes put in an appearance and filled the evening air with their clear loud notes. Surely this bird is not fairly appreciated as a songster. Wrens also are on hand as full of noise and fight as ever. Say what we please of the sweetness and amiability of birds, there is more clear grit and general cussedness to the square inch in a male wren than in anything that wears feathers or hair.

May 7th brought the cat birds and orioles, also a pair of redstarts, the male in black, red, orange and white, the female in modest quaker garb; the first pair I have noticed in the city. It is likely, however, that the lack of foliage enabled us to observe them, while in other years the trees being in full leaf screened their presence from view. Indigo birds came on the 15th; also on the same day I got sight of a pair of rose-breasted grossbeaks, which had been here some days, the male having been often heard — he is a fine singer. Saw also to-day a pair of redstarts of which the male was most singularly marked. It could not have been the marking of an immature bird, for the colors had all their brightness. It is probably a sport or freak of nature. Instead of white wingbars he had great blotches of white on the wing; the outer tail feathers were also white and a large white spot on the side of the head. In size, colors (except the distribution of white spoken of), actions, habits of feeding and notes, it was a genuine redstart, and a very beautiful as well as a singular bird. I could not ascertain that the redstarts built in town, and presume they did not, though they were here until the foliage became thick, and with their secretive habits may afterwards have easily eluded observation. The vireos built in the city, as I heard their song almost daily during the summer. The indigo bird also builds near us every season. Usually those birds which come latest and leave earliest are more heard than seen, though to this rule the wren is a notable exception.

REPORT ON ORCHARD CULTURE.

BY JAMES T. JOHNSON, WARSAW.

Secretary of the Illinois Horticultural Society:

Dear Sir—Your Committee on Programme for 1883 assign me the subject of "Orchard Culture." Duty impels me to furnish a brief report. Having reported upon this subject a number of times heretofore, I shall not attempt to say something new for the sake of originality or for the mere gratification of the morbidly credulous, hence this paper is likely to contain some ideas not original.

Nothing could afford me a greater pleasure than to be able to say something to the advantage of those who are bending every energy which they can command to the selecting, planting, and the cultivation of the many kinds of rich and luscious fruits of which our climate and soil are capable. Upon this subject much valuable information has been heretofore obtained and disseminated through the combined wisdom of the members of the Illinois Horticultural Society, but yet we have much to learn, and what is of all perhaps the most difficult, "to unlearn what we have *learned amiss*," and learn the art of separating the chaff from the solid grain, getting all the real wisdom possible, but not forgetting the important adjunct, to "get a correct understanding."

Learn to rightly appreciate local influences; to recognize the now well-known fact that, in a very large degree, all of our well-known varieties of fruits have their local characteristics, both as to climate and soil. That the Russets, the Baldwins, the Newtown Pippins, Greenings, etc., etc., find a congenial home elsewhere, and not in our "Great West." That some varieties of fruits delight in a sandy soil, while many others flourish equally well, if not better, on our deep rich (and even damp) prairie soils, and still a greater number which find a congenial home in our rolling timber soils (loess formation) and nearest to our lakes and rivers.

After learning what is best adapted to your own locality and soil you are prepared to locate your orchard. In this, if possible, consult your own convenience. *We* should like to have it as near the dwelling as possible, and to the north or west of the house, leaving *always* a generous space for a good lawn and for home ornamentation. In this latitude we should prefer the highest land on the farm, and if to be had, a slight northern exposure. This is not only best for a healthful growth of the trees in summer, but the fruit buds are much less liable to injury by the extremes of our variable climate during winter and spring. In warm exposures fruit buds start prematurely, and are destroyed afterwards, while trees situated on more bleak exposures are kept back and thus escape injury.

With a favorable location and skillful cultivation an orchard may be grown with a good degree of success on almost any character

of soil, including our low rich prairie soils, which seem to need only sufficient drainage to free the surface of water, but not enough to mar the beauty of the surface, or to make it inconvenient to work in the orchard.

Buy all your trees and plants of your nearest reliable nurseryman, and give personal attention to the selecting, removing, and transplanting.

A good average distance for apple trees is thirty feet, taking into consideration the size and character of the tree you are to plant. If your land is high or rolling, plant a little deeper than they grew in the nursery, if low or flat, plant the same depth the tree stood in the nursery, and afterwards raise the surface about the trees gently by plowing, making sufficient room for all the roots, and pack the earth about them with care. For the first five years cultivate the young orchard in hoed crops, leaving small grain and grass for other fields. Mulch will help to retain needed moisture during the first year, afterward use manure *if found to be necessary*. When your orchard comes into bearing you can seed to red clover with some advantage.

Shall we say prune? Yes. With special care and in moderation it is indispensible in order to the proper training and balancing of the tree ("as the twig is bent, so the tree is inclined"), but do not be compelled to remove large branches. Never allow a tree to fork. Train to a pyramidal shape with the main stem or leader running up through the centre, and your tree will be in proper shape to receive either sunshine or storm, and escape both scalds and splits.

For a commercial orchard cultivate the varieties which you are sure are adapted to your own soil and climate, and such as you are sure you can sell in your own accessible markets.

For a family orchard endeavor to suit your own individual taste or fancy, providing they are found to be adapted to your own soil and climate, and bearing in mind that you will need a succession of fruit the year round, I venture to name the following varieties of apples as a good succession, to-wit: Red Astrachan, Golden Sweet, Benoni, Maiden's Blush, Bailey Sweet, Rambo, Fulton, Grimes' Golden, Jonathan, Red Canada, and the inevitable Ben Davis. Such an orchard, if properly cared for after it is planted, will be a source of both profit and pleasure to its owner.

Meetings of the Executive Board

OF THE

Illinois State Horticultural Society.

JULY MEETING.

The Executive Board met in compliance with the call of the President, in Dr. Schrœder's parlors, at Bloomington, Illinois, July 10th, at 3:30 P. M.

There were present President O. B. Galusha, Messrs. Arthur Bryant, Jr., A. G. Humphrey, A. C. Hammond, and Len. Small.

The committee appointed to confer with the Agricultural Board reported that they had donated of the Society's funds one hundred and fifty dollars, which, with fifty dollars appropriated by the Agricultural Board, they divided into three sums to be offered as premiums at the State Fair, at Chicago, September, 1883, as follows: Best and largest display of fruits by society or individual, $100; second, $60; third, $40.

It was moved and carried that the next annual meeting be held on the 18th, 19th, and 20th of December, 1883.

Len. Small offered the following resolutions, which were unanimously adopted:

Resolved, That we, the Executive Board of the Illinois State Horticultural Society, tender our thanks to the last General Assembly and to the Governor of Illinois, for the manifestation of their appreciation of the work which our Society is performing, and for the assistance they have rendered us in appropriating $4,000 for the the purpose of defraying the expense of publishing our proceedings.

Resolved, That our thanks are especially due to the Hon. J. M. Pearson, of Godfrey, Madison County, and to the Hon. Wm. S. Hawker, of Kankakee County, for their zeal and untiring efforts in urging this appropriation bill through the House of Representatives.

On motion, Dr. H. Schrœder was added to the programme for a paper on "Silk Culture," at the next annual meeting.

Moved by A. C. Hammond that O. B. Galusha be allowed $150 on account, for editing and distributing Volume XVI. Carried.

The Secretary stated that Rufus Porter, having moved from the State, had declined to serve as one of the Committee on Raspberries and Blackberries.

On motion D. H. Gray, of Elmwood, was appointed to fill the vacancy.

On motion bills were allowed, and the President instructed to draw orders for the following amounts:

Dr. A. G. Humphrey	$8.50
Arthur Bryant, Jr	8.00
A. C. Hammond	13.30
O. B. Galusha	168.86
Len. Small	30.28

On motion the Board adjourned.

LEN. SMALL, *Secretary.*

DECEMBER MEETING.

The Executive Board met at the Ashley House, Bloomington, 9 P. M., Wednesday, December 19, 1883.

The following members were present at roll call: President O. B. Galusha, Messrs. S. M. Slade, Arthur Bryant, Jr., W. H. Fulkerson, E. A. Riehl, A. C. Hammond, A. G. Humphrey, and Len. Small — a full board.

Minutes of the last meeting were read and approved.

The President then read the following statement of warrants drawn:

To the Executive Board of the Illinois State Horticultural Society:

STATEMENT OF WARRANTS DRAWN FROM JAN. 8 TO DEC. 17, 1883.

No. 103.	Jan. 9.	E. Hollister, exp. meeting Ex. Board $5.90
104.	Jan. 9.	E. A. Riehl, exp. meeting Ex. Board 5.90
105.	Jan. 10.	O. B. Galusha, exp. meeting Ex. Board, also expenses paid as Secretary..... 32.24
106.	Jan. 10.	W. H. Fulkerson, exp. meeting Ex. Board 9.40
107.	Jan. 10.	Ed. Rodgers, exp. meeting Ex. Board 9.40
108.	Jan. 10.	A. C. Hammond, exp. meeting Ex. Board 14.10
109.	Jan. 10.	A. G. Humphrey, exp. meeting Ex. Board..... 15.00
110.	Jan. 10.	A. Bryant, Jr., exp. meeting Ex. Board..... 15.40
111.	Jan. 10.	Len. Small, exp. meeting Ex. Board..... 15.35
112.	Jan. 10.	T. J. Burrill, Ass't Sec. at Annual Meeting..... 12.00
113.	Jan. 10.	H. K. Vickroy, Ass't Sec. at Annual Meeting.... 20.00
114.	Mar. 12.	Hayes & Fletcher, printing books, letter heads, envelopes, etc..... 1004.62
115.	July 10.	A. C. Hammond, exp. July meet. Ex. Board..... 13.30
116.	July 10.	H. G. Humphrey, exp. July meet. Ex. Board 8.50
117.	July 10.	A. Bryant, Jr., exp. July meet. Ex. Board..... 8.00
118.	July 10.	Len. Small, exp. July meeting Ex. Board, and expenses as Secretary to date 30.28
119.	July 10.	O. B. Galusha, $150 editing book; also two bills fr't. and exp., and exp. Board Meeting..... 168.86
120.	Oct. 3.	J. W. Bunn, premiums offered at State Fair..... 150.00
		$1538.25

O. B. GALUSHA, *President.*

PEORIA, Dec. 17th, 1883.

Mr. Riehl moved. That the Secretary be instructed to prepare the minutes of the meeting of 1883 for publication, secure sealed bids for its publication, and when the work is approved by the President and Assistant Secretary the bargain be closed with the publishers, and one thousand copies be printed. The motion was adopted.

The following bills were allowed:

W. H. Ragan, expenses attending meeting	$8.50
J. L. Budd, expenses attending meeting.....	25.35
C. N. Dennis, Ad-Interim expenses	5.10
O. W. Barnard, Ad-Interim expenses.....	15.23
Arthur Bryant, Jr., Ad-Interim expenses.....	3.25
Kankakee Times, printing programmes and jobs.....	22.00
A. C. Hammond, expenses as Ass't Secretary.....	8.93
O. B. Galusha, expenses for Society.....	11.35

Len. Small, one-half year's salary and expenses as Sec'y...	222.98
W. H. Fulkerson, exp. meeting Ex. Board, Dec. '83	12.75
E. A. Riehl, exp. meeting Ex. Board, Dec. '83.....	11 60
A. G. Humphrey, exp. meeting Ex. Board, Dec. '83.....	7.50
O. B. Galusha, exp. meeting Ex. Board, Dec. '83	9.23
A. C. Hammond, exp. meeting Ex. Board, Dec. '83.....	14.55
Arthur Bryant, Jr., exp. meeting Ex. Board, Dec. '83.....	10.95
S. M. Slade, exp. meeting Ex. Board, Dec. '83.....	15.26
Len. Small, exp. meeting Ex. Board, Dec. '83	10.85

On motion the Board adjourned.

LEN. SMALL, *Secretary.*

ANNUAL MEETING — NEW BOARD.

The Executive Board convened in the Agricultural Rooms, Springfield, on Wednesday, January 9th. Present: John M. Pearson, President; A. C. Hammond, Secretary; S. M. Slade, Arthur Bryant, Dr. A. G. Humphrey, H. M. Dunlap, and E. A. Reihl.

Mr. Dunlap moved that the officers of the Society be *ex-officio* officers of the board. Motion adopted.

The Secretary presented the bond of the Treasurer for approval, which, after some discussion, was referred to the President and Secretary.

Mr. Len. Small, from the Publishing Committee, made the following report:

Mr. President:

Your committee met last evening and opened the proposals for publishing Vol. XVII of our transactions. We found nine in number and accepted conditionally that of J. W. Franks & Sons, Peoria, Illinois. * * * We also examined and approved the Secretaries' first day's manuscript.

Report accepted by the Society.

PEORIA, ILL., January 7, 1884.

To the Executive Board of Illinois State Horticultural Society, at Springfield, Ill., January 9, 1884:

I have the honor to make the following statement of the financial condition of the Illinois State Horticultural Society of whose funds you are the legal custodians:

Amount of available funds January 8, 1883, (see statement on page 220, volume 16, (reports)	$2,373.93
Drawn from State Treasury same date	2,000.00
Total	$4,373.93
PER CONTRA:	
Warrants Nos. 103 to 183, inclusive, paid by our Treasurer	$3,998.19
Balance in hands of our Treasurer	$375.74

To this may be added the amount received by the Treasurer at last meeting for memberships, about $95; exact amount not reported to me by Treasurer, or at least $465 now in our Treasurer's hands. The appropriation of $2,000 for 1883 is intact in the State Treasurer's office, but must be drawn before July 1st, 1884, or it will revert to the State.

Respectfully submitted,

O. B. GALUSHA,
President for 1883.

Dr. Humphrey moved that the forthcoming volume of transactions be distributed as follows: Two volumes to each paying member of the Society present at the annual meeting; three hundred to the Legislature and State officers; twenty-five to each of the three district societies; fifteen to each local society; ten each to the President and Secretary, ex-President and ex-Secretary; five to each member of the Board, and one hundred and fifty donated to public libraries and exchanged with other state societies.

Motion adopted.

It was moved that when the Publishing Committee certify to the President and Secretary that the book is completed according to specifications, they be authorized to draw an order on the Treasurer for the payment of the bill. The motion unanimously prevailed.

Mr. Len. Small presented the request of Prof. Forbes that the proof of his paper be sent to him for correction, and also that one hundred copies be printed and bound in paper for his use.

By vote of the Board the request was granted.

Mr. Dunlap offered the following resolution:

Resolved, That the ex-Secretary, Len. Small, is instructed to complete the editorial work of the present volume of transactions, and in connection with O. B. Galusha and A. C. Hammond, be continued as Publishing Committee, and be authorized to let the contract for the publishing of the volume, and accept or reject the work when completed.

Resolution adopted.

Mr. Riehl offered the following:

Resolved, That the ad-interim work of this Society be placed in the hands of the Presidents and Vice-Presidents of the Northern, Central and Southern Societies, and that they be authorized to appoint, from time to time during the season, persons having the time and ability to properly do the work, and that the various reports thus obtained, from each section, be by them combined in one report to this Society at its annual meeting, giving to each person contributing proper credit for matter furnished.

This resolution brought out considerable discussion as to the best mode of securing satisfactory results from these committees, but was unanimously adopted.

On motion it was ordered that the standing committees on fruits shall consist of three members, one from each horticultural district, and that they shall include in their several reports two short lists of varieties best adapted to their respective districts: one list to include varieties for commercial purposes only, the other to include varieties for home use.

Mr. Slade moved that the President and Secretary be instructed to correspond with Prof. Burrill in relation to the time of the next meeting, and fix it at such a date as will be most convenient for the faculty and students of the University.

Motion adopted.

Mr. Reihl and Mr. Dunlap moved that we offer premiums, not to exceed $300, for an exhibition of horticultural products at our next winter meeting, and that a committee be appointed to arrange a premium list and make such rules and regulations as may be necessary. The motion prevailed, and A. C. Hammond, John M. Pearson and Arthur Bryant were appointed such committee.

Dr. Humphrey moved that President Pearson and Arthur Bryant be requested to investigate the feasibility of procuring engravings of Ex-Presidents Flagg and Bryant for publication in a future volume of our Report. The motion prevailed unanimously.

On motion it was ordered that when the work of the Ex-Secretary is completed the President and Secretary be authorized to draw a warrant for the payment of the balance of his salary.

Mr. Bryant moved that the Society make an exhibition of fruit at the next State Fair. Motion carried, and J. T. Johnson appointed to take charge of the display.

Mr. Dunlap offered the following resolution:

Resolved, That the sum of fifty dollars be appropriated to each of the three district societies of this State, to be used in advancing the interest of horticulture in their respective districts. The several amounts to be subject to the order of the societies named and expended under their direction. In order to secure this amount it shall be necessary for each society to hold an annual meeting during the year, at which essays, papers, and reports shall be read and discussed. On compliance with the above conditions, the President and Secretary of this Board are instructed, on demand, to draw an order payable to the proper officer of the societies mentioned.

After an extended discussion the resolution was unanimously adopted.

On motion it was ordered that when Mr. Endicot presents his bill for expenses incurred while doing ad-interim work, the President and Secretary draw a warrant for the amount.

Mr. Reihl offered the following:

Resolved, That a sum not to exceed $100 be appropriated to pay the expenses of ad-interim work in each fruit district.

Resolution adopted.

Mr. Dunlap presented the following resolution:

Resolved, That this Board offer a premium of ten dollars for the best, and five dollars for the second best, original essay, to be read at the annual meeting, on some subject relating to horticulture. Competition to be limited to the students of the Illinois Industrial University.

Resolution prevailed.

On motion the Secretary was instructed to have fifteen hundred letter heads and envelopes printed for the use of the officers of the Society.

The following bills were allowed and ordered paid:

H. M. Dunlap, expenses attending Board meeting	$11.74
A. Bryant, expenses attending Board meeting	13.95
S. M. Slade, expenses attending Board meeting	16.15
J. M. Pearson, expenses attending Board meeting	5.00
A. G. Humphrey, expenses attending Board meeting	10.25
E. A. Reihl, expenses attending Board meeting	8.90
A. C. Hammond, expenses attending Board meeting	14.35
O. B. Galusha, expenses incurred for Society	11.88
Len. Small, expenses incurred for Society	17.85
H. S. Bloom, reporting	20.00
A. C. Hammond, reporting and services as Asst. Secretary	50.00

On motion the Board adjourned to meet at the call of the President.

J. M. PEARSON, *President.*

A. C. HAMMOND, *Secretary.*

TRANSACTIONS

OF THE

HORTICULTURAL SOCIETY

OF

NORTHERN ILLINOIS

HELD AT

ELGIN, JANUARY 22, 23 AND 24, 1884.

REPORTED BY

E. W. GRAVES, RECORDING SECRETARY.

LIST OF MEMBERS — 1884.

C. W. Prescott	Marengo	Nursery.
D. J. Piper	Foreston	Nursery.
S. M. Slade	Elgin	Fruits.
Samuel Edwards	Mendota	Small Fruits.
H. C. Graves	Sandwich	Nursery.
E. W. Graves	Sandwich	Nursery.
A. L. Small	Kankakee	Nursery.
Lewis Ellsworth	Naperville	Nursery.
Dr. J. W. Cochran	Blue Island	Fruits.
F. C. Johnson	Kishwaukee, Winnebago Co.	
T. Hallett	Galena	Small Fruits.
George Thompson	Geneva	Apiary.
John V. Cotta	Lanark	Nursery.
Hugh Todd	Elgin	
S. G. Minkler	Oswego	Orchard and Nursery.
A. Bryant	Princeton	Nursery.
D. W. Scott	Galena	
E. H. Ricker	Elgin	Nursery.
Henry Hansen	Franklin Grove	Cider Vinegar and Forest Tree Seedlings.
A. R. Whitney	Franklin Grove	
N. A. Whitney	Franklin Grove	
W. A. Hunt	Wright's Grove	Greenhouse.
D. Hill	Dundee	Evergreen Seedlings.
H. W. Williams & Son	Batavia	Greenhouse.
D. C. Scofield	Elgin	
L. M. Rose	Elgin	
B. O. Neil	Elgin	Greenhouse.
F. J. Foster	Elgin	
P. Vanostrand	Elgin	
Joseph Tefft	Elgin	
W. A. Pratt	Elgin	
James Crow	Crystal Lake	
G. H. Clayson	Nunda	
L. Woodard	Marengo	
J. S. Rogers	Marengo	*Whiteside Farmer and Fruit Grower.*
J. R. Whitney & Co.	Carroll, Iowa	
Dr. L. S. Pennington	Sterling	
W. F. Crummer	Galena	Gr. of Small Fruits.

HONORARY MEMBERS.

J. G. Kellogg	Janesville, Wis	Nursery and Vineyard.
Mrs. A. R. McGlincy	Elgin	
Mrs. David Gorman	Carpenterville	
Mrs. L. K. K. Becker	Elgin	
Mrs. Ira R. Curtiss	Marengo	
Mrs. A. R. Whitney	Franklin Grove	
Miss Grace Graves	Sandwich	
Miss Emma Norton	Marengo	

CONSTITUTION.

ART. 1. This Association shall be known as the HORTICULTURAL SOCIETY OF NORTHERN ILLINOIS, and shall embrace the Counties of Bureau, Boone, Cook, Carroll, DuPage, DeKalb, Henry, Grundy, Jo Daviess, Kane, Kendall, Kankakee, Lake, Lee, LaSalle, McHenry, Ogle, Putnam, Rock Island, Stephenson, Whiteside, Winnebago, and Will.

ART. 2. Its object shall be the advancement of the Science of Pomology and the Art of Horticulture.

ART. 3. Its members shall consist of annual members paying an annual fee of two dollars; of life members, paying a fee of twenty dollars at one time; and of honorary members, who shall only be persons of distinguished merits in horticulture or kindred sciences, who may, by vote, be invited to participate in the privileges of the Society. The wives of members shall be members without fee.

ART. 4. The officers shall consist of a President, three Vice-Presidents, one Corresponding Secretary, two Recording Secretaries, a Treasurer, and an Executive Committee, which shall consist of the President, Ex-President, and Corresponding Secretary, all of whom shall be elected at the annual meeting, and shall serve for one year from the first of February and until their successors are elected.

ART. 5. The Vice-President first elected shall be a member of the Executive Board of the State Horticultural Society.

ART. 6. The Association shall hold annual meetings at such time and place as may be determined by the Executive Committee.

ART. 7. This Constitution may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

1. The President shall preside at all meetings of the Society, call meetings of the Executive Committee, and, under its direction, have a general superintendence of the affairs of the Society and direction of the expenditures of its money; he shall deliver an annual address upon some subject connected with horticulture, and shall appoint all committees, unless otherwise ordered.

2. The Vice-Presidents, in the order of their appointment, shall act in case of the absence or disability of the President, and shall, by correspondence and personal intercourse with the horticulturists of their several localities, endeavor to organize local societies, obtain accurate information of the condition and progress of horticulture therein, and report annually, in writing, to the Society.

3. The Corresponding Secretary shall attend to all the correspondence of the Society.

4. The Recording Secretaries shall record the proceedings of the Society, file and preserve all papers belonging to it, and prepare its reports for publication.

5. The Treasurer shall receive and keep an accurate account of all moneys belonging to the Society, and disburse the same upon the written orders of the President, which he shall retain and file as vouchers; they shall make an annual report to the Society of the receipts and disbursements, which, with the vouchers, shall be referred to the Executive Committee for settlement.

6. The Executive Committee shall, subject to the direction of the Society, manage all its affairs.

7. There shall be chosen annually by the Executive Committee, standing committees of three on each of the following subjects: Meteorology in its relation to Horticulture; Geology and Mineralogy in their relation to Horticulture; Ornithology in its relation to Horticulture; Entomology in its relation to Horticulture; Botany in its relation to Horticulture; Fruit Lists, Orchards and Vineyards; Ornamental and Useful Tree Planting.

8. These By-Laws may be altered of any meeting by a majority vote of the members present.

OFFICERS FOR 1884.

President—S. M. Slade, Elgin.

First Vice-President—Arthur Bryant, Jr., Princeton.

Second Vice-President—J. V. Cotta, Lanark.

Third Vice-President—D. Hill, Dundee.

Corresponding Secretary—D. W. Scott, Galena.

Recording Secretary—E. W. Graves, Sandwich.

Assistant Recording Secretary—J. S. Rogers, Marengo.

Treasurer—L. Woodard, Marengo.

STANDING COMMITTEES.

Farmers' Horticulture—C. W. Prescott, Marengo.
Forest Tree Culture—Samuel Edwards, Mendota.
Orchard Culture—A. Bryant, Jr., Princeton; J. V. Cotta, Lanark.
Plums and Cherries—D. W. Scott, Galena.
Berry Culture—E. C. Hathaway, Ottawa.
Vegetable Gardening—Geo. S. Haskell, Rockford.
Grapes and Grape Culture—D. J. Piper, Foreston.
Utilizing Fruits—G. H. Clayson, Nunda.
General Horticulture—James Crow, Crystal Lake; G. W. Garrett, Rocoe.
Ornithology—A. L. Cummings, Galena.
Shade and Ornamental Trees—J. H. Garrison, Greenwood.
Progress of Horticulture—S. G. Minkler, Oswego.
Floriculture—B. O'Neal, Elgin.
Prophecies in Horticulture—Dr. H. Schrœder, Bloomington.
Vegetable Physiology—Mrs. Dr. S. C. Harris, Galena.
Home Adornment—Mrs. W. G. Hubbard, Elgin.

PROCEEDINGS

OF THE

HORTICULTURAL SOCIETY OF NORTHERN ILLINOIS.

The Horticultural Society of Northern Illinois held it seventeenth annual meeting in the Universalist Church in Elgin, Kane County, commencing at 11 o'clock, Tuesday, January 22, 1884.

The President, S. M. Slade, called the meeting to order. Very few members being present the regular order of business was not taken up, and the President announced as a committee to prepare and present a programme, Messrs. H. C. Graves and D. W. Scott.

On motion the Society adjourned until 1:30 o'clock, P. M.

FIRST DAY—AFTERNOON.

The Society convened as per adjournment at 1:30 o'clock, with an increase of numbers.

President Slade called the meeting to order and introduced Col. John S. Wilcox, who made a happy and appropriate speech welcoming the Society to the city.

Dr. A. L. Small, at the request of the President, responded in behalf of the Society.

The Committee on Programme of Business reported for this afternoon: 1st, President's Address; 2d, Farmer's Horticulture; 3d, Treasurer's Report.

PRESIDENT'S ADDRESS.

Ladies and Gentlemen of the
Horticultural Society of Northern Illinois:

We have again come together for the purpose of holding the seventeenth annual meeting of this Society. During the past year, while some of our fruits have proved a failure, or partial failure, according to locality, yet on the whole I think the season has blessed us with the usual plenty of the good things of life. But let us remember, while we are so thankful for the achievements of our successful efforts, which always bring us present pleasures, that our failures are often the most profitable if they impel us to fathom the why and the wherefore of the difficulty, and thereby point out the way to more successful efforts for ourselves and others in the future. And let us also not forget that while we are here as pupils and students, seeking and trying to comprehend as far as possible the occult forces of nature by which Mother Earth so generously supplies all our wants, we are yet more than that — we are teachers. And while there are many mysteries yet unexplained, and many problems yet to be solved, I feel proud to say, what most of you know, that we have in the sixteen years of this Society's existence mastered many important truths in horticulture, and solved many knotty problems which have been sent out to the world through our published proceedings and the press, which has disseminated largely our doings, ever treating us very generously indeed. From what we have already accomplished by our past labors let us hope there is yet much in store for us. Wherever we look grand achievements have been accomplished in every department of life, and with the indomitable energy and perseverance of the Anglo Saxon blood, ever ready to say "I will try," let us not doubt that our future labors shall accomplish even more than the past.

During the years of the existence of our Society many of our members have dropped out by the way, but we have kept steadily on. During the past year two brothers, very near and very dear to us, have passed on to the beyond. Appropriate committees have already been appointed, and in due time an expression of this Society will be given. Without trenching upon their duties, I feel it not inappropriate that I, as your presiding officer, should also say something on this occasion; and it affords me no ordinary pleasure that I can say to you it will be principally congratulatory. These friends, while yet with us, had made many mile-posts beyond the allotted time of three score years and ten. I feel that we can all say of them they had fought a good fight, had nobly fulfilled their mission, and have left us full of years and full of honors — landmarks long to be remembered with pleasure and profit by us all. As to Father Bryant, many of you knew him long and intimately, while to me it was but a limited acquaintance; and yet at our first meeting I saw him as

one of those notable characters who at once impresses you as possessing a manly dignity and a noble manhood. To these grand natural characteristics he had, by long study and thought, added large mental attainments. And yet, with all these, how emphatically can we say of him he was modest and simple in his habits, kind and generous in his actions, with a warm and loving heart for his kind, and ever ready with head and heart, and with voice and pen, to do whatever he could for the benefit of humanity. Such were my first impressions of Father Bryant. Subsequent meetings more than confirmed my first impressions.

Of Dr. Warder, with his kind and genial temperament, filled with a noble enthusiasm for our work, and with a magnetism that was always contagious, he ever came among us only to leave us the better for his coming. Wedded as he was to the noble cause which we are united together to advance, and comprehending, as few of us do, the vast field for human advancement which is open to us, I do not wonder that we all feel that he is a brother indeed. With a life's labor which seemed to never tire in the cause, and a reputation, not only in this country but in foreign lands, which time will only enhance, yet he possessed a modesty that nothing save the enthusiasm and love he had for the work could overcome. But I perhaps cannot give you a better idea of the man than to quote a very short letter from him, and read to this Society at Freeport just eleven years ago this very day:

PRESIDENT ELLSWORTH: *My dear Friend*—I cannot tell you how highly I feel flattered by your kind and pressing invitation to be with you at the coming festival of good feelings which I am sure you will have at Freeport. And oh! how I should have enjoyed meeting so many of my good friends who will be there. I beg of you to present me lovingly to them, and assure them that though past the grand climacteric of human life, and already feeling the weight of years, I know that a few days in their midst would have rejuvenated me very much. Alas, it cannot be, and my disappointment is great. I send herewith some notes of the past year, on new and little known varieties of apples, which will hardly do to read, but may, if referred to a committee, be considered worthy of a place on the record, if only for reference. Several are mentioned only to be avoided. Please assure my good friends, many of whom I trust have been seeking a better country, that it is my earnest desire, should we never be favored to meet again in this world, we may have the joy of mingling our praises in the realms of eternal bliss in a future state of existence.

And so, farewell! Your friend, WARDER.

Friends must meet, and friends must part,
But the wealth we prize is a loving heart.

At our last annual meeting a series of preambles and resolutions pertaining to Forestry, drawn up by our long-tried veteran in the work, D. C. Scofield, was adopted by this Society. As the objects of the resolutions were not carried out at that time, and are still before this Society as unfinished business, I recommend, at the proper time, when this subject of forestry shall come before you, that you con-

summate what was there begun by the appointment of a proper committee as there suggested. This subject of forestry is one of those topics that cannot be ignored. It would not be right if we could. The efforts we have put forth in this direction have not been in vain. Work of great value has already been accomplished. Some of our States have done much. Our general government has made a move. Their face is now in the right direction, and they are looking. It is for just such societies as this here convened to give the necessary aid that shall help them to see. And I do not think we can carry out this work in any other way so efficiently as to consummate the spirit of those resolutions we then adopted. While the iron is hot is the time to lay on the blows vigorously. A work of such gigantic proportions as this requires strong, energetic, persistent, and continuous labor; and even then we may expect to hand down much of it to our children and children's children. Russia, for more than two hundred years, has been giving us a noble example. Other countries have given us lessons of perhaps equal value. A good soldier arms himself with every weapon that can accomplish his purpose. With these facts and data already at hand, collated and prepared as suggested by the resolutions, we have done what we could to urge at least another step forward. Our states and government must eventually furnish the sinews of war for the accomplishment of this work; and I think principally our government, made up, as we know, of men, many of them much more the politician than the legislator. This we may deplore but cannot remedy. They will not take the time to inform themselves of the great national importance of this subject. Their thoughts are in other directions. Is it not the part of wisdom that those who have at heart these great national interests, and see and feel their significance, shall think for them? And not only think, but press those thoughts wherever and whenever good may be accomplished. And let us not falter that we do not accomplish everything in a day. It is enough for us that we have done well our duty. Our fathers, by seven years of struggle and toil (trusting in Providence and keeping their powder dry), gave to us the noble heritage we now possess and enjoy. Cannot we do something towards clothing this land (which God's Providence has given us) in a mantle of living green, that shall cause our children to rise up and call us blessed?

The very topography of our State, extending as it does through so many degrees of latitude, with its varied climatic conditions and its large variety of products, must always render it of unusual interest to all lovers of horticulture. This very fact should make our reports far more interesting than they could otherwise be, and calls for an unusual amount of labor to accomplish the same.

And I desire here to call your attention to some of the doings of the State Board of Horticulture at its annual session just passed. For the first time in its history it has made an appropriation of one

hundred and fifty dollars to the three societies of the State—fifty dollars each to the Northern, the Central, and the Southern. The expenditure of these amounts was left to the discretion of the respective societies. I trust this appropriation, small though it be, may receive your earnest consideration, and that you take such action in regard to it as your wisdom shall dictate, so that it may be expended in such manner as to subserve the best interests of horticulture. The Board took the usual course, perhaps, in the appointment of the ad-interim committees. It was felt that these committees were of paramount importance, and a liberal appropriation was made to meet the necessary expenses of the work. It is known to all the older members that the work of these committees, which has, sometimes at least, been very great, has been wholly a labor of love. But I bring this matter before you at this time, not so much to impress upon you the fact that the Board desires a more vigorous prosecution of this work, as I do to impress upon you another fact, and that is that your incoming president and vice-president, by virtue of their office, are members of the State Board, and will for the first time become what I may call a committee of the Board for the Northern Division, with the duty of seeing that this work is thoroughly and efficiently done. And if from any cause the appointees fail to perform their duties, it is made the duty of your president and vice-president to appoint others in their place, or do the work themselves. That we have individuals for this work with the ability to treat of the specific character of soils, as well as their cultivation and general treatment, is to be greatly desired.

The Board also made an appropriation and fixed the premiums for a show of fruit, etc., to be made at the next state meeting at Champaign, which I respectfully refer to you for such consideration as your wisdom shall suggest for coöperating in accomplishing the object sought to be attained.

Looking, as we always should, to the best interests of our Society, and the accomplishment of the greatest good by our gatherings and publications, I would suggest whether greater usefulness may not be subserved by making the two subjects, Farmers' Horticulture and Vegetable Gardening, more prominent in our discussions. Their paramount importance, supplying as they do the every-day wants of the family, and especially in consideration of their immediate returns, gives to them a peculiar if not a pecuniary interest not attainable by other subjects of equal or even greater importance.

In closing this paper I desire to say that I have hastily given you some of the thoughts that have come to me in the few hours I have devoted to it. If, as a Society, we have accomplished much good in the past, shall we not do all in our power to make our future equally beneficial?

Many of those who commenced at the first hour are completing their labors, and more energy and vigor, with younger blood, must

be brought in or the work will eventually languish. It is greatly to your credit that your labors have ever been conducted, not for personal ends, but for the general good.

I trust we may continue to move on in the old well-beaten path, cultivate and beautify the earth, adorn and embellish our homes, for by so doing we not only educate, beautify, and ennoble our own characters but the characters of all around us. And remember that it is not the torrent rushing over the rocks so much as the continued dropping that makes the impression. And so may we be ever ready, as opportunities may offer, to do all in our power for the advancement of our noble art.

On motion of Dr. A. L. Small, a committee consisting of S. G. Minkler, G. J. Kellogg and L. Woodard, was appointed to consider and report upon the topics presented in the President's address.

G. J. Kellogg, delegate from Horticultural Society of Wisconsin, being present, was called for and responded in a few words, saying: "I am glad to meet again with your Society, and shall be glad to do anything I can to make your meeting one of interest."

On motion of Mr. Minkler the Corresponding Secretary was instructed to telegraph the greetings of this Society to the Mississippi Valley Horticultural Society in session at Kansas City, Missouri.

REPORT UPON FARMERS' HORTICULTURE.

BY C. W. PRESCOTT, MARENGO, ILL.

Mr. President and Gentlemen of the Society:

I suppose what few words I may say should be addressed to the farmers of this Society, so you professional members will be excused if you do not pay very good attention. To the farmers, then, I will say, first get your fences up. Don't let any tree peddler, tree agent, or "old reliable nurseryman" talk you into buying a bill of stock until your ground is fenced and in order. Of course it would not be as bad for the "old reliable nurseryman" to sell you a bill before you was ready (if he only sold it himself) as for the tree peddler, or tree agent, but don't let even him do it, for it is only a waste of time, and money and time in this case is of more value than the first cost of what you put out.

In selecting your ground for fruit trees be careful. If the land where the orchard should be put (that is, near the house) is cold and low, where the water is but little below the surface, go to the other side of your farm rather than use it. Of course you all understand that such ground will not answer for fruit trees. Select land

with good drainage, rolling, with north slope if possible. If nature has not fitted a piece for you anywhere on the farm, then do the next best thing, take the piece that by artificial means you can make suitable, but if you can find no such land on the farm, why, then, sell out.

In regard to varieties choose for yourself. Every farmer now-a-days is well enough posted on fruit (or at least should be) to make out his own list. But, be sure you don't make your orchard a commercial one, by setting out only a few varieties and then selling off all the best of your fruit. (I am speaking of the apple orchard.) The farmers' orchards should be for their own use; put the very best of everything in your *own* cellar. After you are sure you have saved more than you can possibly use it may do to sell a little. Don't cheat yourself by putting out only eight or ten kinds—make it twenty-five or thirty. If you have a clay soil put out a few pear trees. Set one or two peach trees every year—they may surprise you some time—they cost but little You have plenty of room and should provide yourself with all these luxuries.

When you come to small fruits put them near the house, or garden, any way. It does not make so much difference what the ground is for them; they will thrive on almost any soil. And right here the most of farmers fail—they neglect the berries—they seem to be beneath their notice, too small. Let me tell you there is nothing in the fruit line that will give you returns so quick, or so great, for the same outlay. But I think it will be better for you to say to your wife "I will leave this department for you," and I will guarantee it will not be long before you will have plenty of berries on your table, of all kinds, in their season. Lay out your grounds so that cultivation will be by horse-power. Let the berry rows become hedges rows, but give plenty of room the other way.

When you get to the ornamental grounds, setting out front yards, lawns, etc., I don't think you want anyone to write a long article setting forth how you must set out and lay out *your* grounds; but go to work yourself, and with the help of your wife and children, in the end you will be much better suited than you would had you followed the directions of the best landscape gardener. One thing I wish to speak of: In setting groups of evergreens put each variety in a group by itself; do not mix up two or three or four kinds; you will never be satisfied with them if you do.

Remember the "shelter belt" for your stock, to be set near the barn and yards. Make this of evergreens every time. If you have a prairie farm and no timber lot, set apart five or ten acres, and set it out next spring (or a portion of it) with some fast growing tree, or several kinds, such as are doing the best in your locality. You have no excuse for being long without timber.

But where are you going to buy all these things? Some of these old nurserymen that are on the retired list will tell you to avoid

the tree agent and the tree peddler, and go directly to the nursery, or, as they say, buy only of some "old reliable nurseryman." I would like to ask these gentlemen how many trees would there be set if it was not for this tree agent? I tell you, farmers, they are among your best friends, for they will "stick closer than a brother." Patronize them, and see to it that they deliver the trees according to contract.

Buy of your home nursery or send your orders into headquarters yourself. No doubt this would be the best way, if you would only do it. There is no trouble but what you can get the trees, and good ones too, if you will only decide to have them. But for fear our president will never give me a chance again, I will close.

DISCUSSION ON FARMERS' HORTICULTURE.

Mr. Minkler — I don't like the idea of planting so many varieties as the paper suggests. Twenty-five kinds are too many—ten are enough for me. Shelter belts for orchards are a thing of great importance, and I would like to impress the people in some way of the great need of such protection.

Mr. Thomas — I do not agree with the writer in the setting out part. If you cannot raise fruits, better plant what will do well, and grow potatoes and buy apples.

Mr. Kellogg — The greatest objection I see to the paper is too many varieties of apples. I do not think there are three kinds that we can tie to. I think it is better for a man to sell out if he has not got a good place for growing fruit, or else grow crops and buy apples, etc.

Mr. Scott — A man in the northwestern part of our county grew fifty bushels of peaches this last season. I picked some very fine peaches last summer from some trees that were planted fifteen or twenty years ago. The trees had sprouted up every year, thus keeping alive and bearing occasionally. I think the suggestion in the paper to plant peaches a good one, judging from my own observation.

Mr. Minkler — Two years ago I had all the peaches my family could use gathered from trees planted some thirty years ago. The trees keep sprouting up so that I get peaches about every other year, and a crop one year in five.

President Slade — I think the surprising part of Mr. Scott's experience is the fact of his getting peaches after such a severe winter

as we had last year. I think it a good suggestion to plant peach trees, for you will get fruit occasionally that will be very good, much better than you usually buy in the market.

Mr. Minkler — It is not the severe cold that kills peaches; it is the condition trees are in when the frost comes. They will stand lots of frost if in the proper condition.

Question — What condition must they be in?

Answer — The wood should be moist and not dry, and well matured.

Mr. Cotta — On the apple question I think we have at least three varieties that we can plant with some surety, and we should keep on experimenting with new varieties. I think that top-grafting is a good thing. Something can be obtained by grafting tender sorts on to hardy stocks. Last winter my Ben Davis, Willow Twig, and others on common stocks, were killed, and I had to throw them on the brush pile, while the same varieties I had grafted on crab stocks were not hurt a particle, and I am considerably encouraged with top-grafting. I appeal to all of my brother horticulturalists and every one to keep on experimenting with new varieties.

Mr. Kellogg — I think it would be better to top-graft on Duchess in place of crab stocks.

President Slade — I put out an orchard of one thousand trees some years ago, and we top-grafted some of them, but did not see as it made much difference. I took great pains in setting the orchard and it was a fine one, but is of no use now. There were not apples enough on the one thousand trees this year to make one pie. We want more than three varieties, and ought to keep on experimenting and try to increase the number.

Mr. Bryant — I do not think that twenty-five varieties to plant in an orchard was very far out of the way. I should not want to plant less than that many kinds for myself. Would certainly want more than five or ten kinds.

Mr. Cotta — The nursery is the place to do top-grafting, and it is practical. Any nurseryman can graft several thousand every year and it will pay them to do it. I have no trouble in getting fifty

cents a tree for such stock. My customers are perfectly willing to pay that amount when they are shown the advantages of top-grafting.

Mr. Woodard — I have raised an orchard, planted and grown it from its infancy, and I regret very much to hear the gentleman cut the number of varieties down to five. It is necessary to keep planting and top-grafting and re-top-grafting, to keep the orchard up, and as much care should be taken to keep up the good varieties, and I think twenty-five varieties are none too many to plant in an orchard. I believe that the insects do more harm to our orchards than the severe winters do. I think Paris green is a good thing to keep off the insects that eat this foliage, and we get finer and fairer apples when we use it. I find that we should fight the insects as much as we do the severe winters. We want to get trees that ripen up well. Famuese does well in Canada where the thermometer goes down 40° below zero, because the wood ripens up well. I put half a pound of Paris green in a barrel of water and keep it well stirred up while using. It will kill all insects that feed on the foliage.

Mr. Minkler — I think if you use the Paris green when the trees are in bloom, that it lodges in the up-turned blossoms, and when the curculio goes to deposit his eggs he does not like the Paris green, and that was the secret of success. Arsenic is better than Paris green, is more soluble and more effectual.

President Slade — We had a very interesting paper fron Professor Forbes at the State Meeting, and I hope every one will read the article on this subject of injurious insects.

Mr. Kellogg — The poisoning is one I would like to hear more of. The trouble with professors' reports is, they do not set forth anything that is practical; what we want is something that we can make practical. I have seventy-five varieties in my orchard. My experience is the same as Mr. Slade's; did not get apples enough for a pie. I syringed my trees with no effect. Tried it on Hoos, where there was a profuse bloom, but got no apples.

Mr. Cotta — Walbridge acted queer with me after last winter's severe weather. The leaves had a fungus growth on them and the trees looked sickly and did not do well.

Mr. Kellogg — I am sorry that the Wisconsin people recommended the Walbridge so highly, as it has not proved to be all that was claimed for it. Pewaukee is one of our pets. We had a fine show of fruit at our State Meeting.

Mr. Slade — I am not sorry that the Wisconsin people recommended the Walbridge; I think it is a good apple, and we ought to recommend new fruits of promise.

Mr. Kellogg — I think we recommend things before we ought. New varieties should be well tested before they are represented to the people as being of great value, and their planting advised.

Mr. Hallett — I have been engaged in the apple business for a good many years and am sorry I ever planted an apple tree: it does not pay. It is all foolishness to plant apples for profit, and I have grubbed up nearly all my orchard.

Mr. Scott — I have watched Mr. Hallett's fruit growing for thirty years and think he has been very successful. He expects too much. His orchard did well. He had good crops of plums; cleared $200 from thirteen trees in a little garden patch in one year; I think that is as good as any man could expect. He made six or seven hundred dollars one season from a little patch of blackberries. I think Mr. Hallett expects too much: is too grasping.

Mr. Hallett — I got $200 a year for two years off of the thirteen plum trees Mr. Scott refers to, and being elated over my success I then planted an orchard of thirteen hundred trees and tended them with care for twelve years and never got a crop. Becoming disgusted with the scheme, I grubbed the whole orchard up and put the trees in my wood-house.

Mr. Minkler — I dislike very much to have it go on the records that an old citizen could not recommend the planting of an orchard. I don't think it would look well and people would not think well of it.

Mr. Slade — I know of an apple tree near the city of Elgin that had borne very profusely and very regular for a good many years. I attribute its success to some peculiar make up of the soil in the immediate vicinity of the tree. I have two Northern Spy apple trees that have been bearing ever since very young.

Mr. Kellogg — The adaptation of locality is a most important thing in setting fruit of any kind.

Mr. Chrocker — I have given great attention in my orchard to locality, but I do not think that it is so much the locality as the fungus growths that have appeared of late that did the mischief. This fungoid growth attacks the leaves and nearly destroys them in some cases, which makes the tree sickly and in no condition to bear fruit.

Mr. Cotta — There has been more fungoid growth among my trees the past season than I ever saw before; I attribute it to the excessive wet weather. I got some good fair Duchess apples, and the Willow Twig and Red Astrachan were free from fungus growth. It does not attack all varieties alike.

President Slade asked if many of the old apple trees were killed this last winter throughout the Northwest so far as any one knew.

Mr. Cotta — Many of the trees suffered in our county.

Mr. Hallett — My cherry trees suffered and some were badly damaged.

Mr. Ricker — I have seen quite a number of apple trees killed in this vicinity, especially some of the more tender sorts.

The Treasurer of the Society presented the following

TREASURER'S REPORT.

L. Woodard, Treasurer, in account with the Horticultural Society of Northern Illinois, Jan. 22, 1884:

Jan. 18, 1883.. To cash balance on hand	$53.68	
For membership fees	35.00	
Jan 18, 1883.. By cash paid O. B. Galusha, as per bill for services as Secretary		$25.00
Jan. 18, 1883.. By cash paid D. W. Scott as per bill.		6.75
Jan. 18, 1883.. By cash paid Bartholomew & Co., for use of hall and fuel		7.00
May 30, 1883.. By cash paid O. B. Galusha for postage on books		3.92
Aug. 29, 1883.. By cash paid D. W. Scott & Co., for printing as per bill		20.50
By cash for postage year 1883		1.00
By balance		24.51
	$88.68	$88.68
To balance in Treasurer's hands, Jan. 22, 1884		$24.51

Respectfully submitted,

L. WOODARD, *Treasurer.*

On motion of Mr. Minkler the report was accepted.

On motion of S. G. Minkler J. G. Kellogg was made an honorary member of the Society for 1884.

DISCUSSION CONTINUED.

Mr. Scott — I am afraid from what Mr. Hallett has said in regard to fruit-growing in our county, that members will think we can't grow fruit at all. Am unwilling that you should get such an erroneous idea. I think we can make a success of it, especially of some things, and every man ought to plant fruit enough at least for his own family.

Mr. Thompson asked Mr. Hallett how old his plum trees were before he cut them down?

Answer — They were about twelve years old. I may have cut them down too soon possibly.

The Committee on Programme announced as the order of business for this evening:

1st. Report on Ornithology, by A. L. Cummings, of Galena.

Discussion.

2d. The Yeast Plant, by Dr. S. C. Harris, of Galena.

Discussion.

3d. Report on Orchard Culture, by Hon. O. B. Galusha.

Discussion.

4th. Query Box.

5th. Miscellaneous Business.

A motion to adjourn until 7 o'clock in the evening prevailed.

FIRST DAY — Evening.

The Society met at 7 o'clock in the evening as per adjournment. President Slade called the meeting to order, and paper was called for on

FOREST TREE CULTURE.

BY SAMUEL EDWARDS, MENDOTA.

S. M. Slade, President, and Fellow-Members of the Horticultural Society of Northern Illinois:

"Oh, for a lodge in some vast wilderness" is the piteous cry, brought on the swift wings of the relentless north wind, as it goes howling past from the broad prairies of the northwest. How strange that so little heed is given to it — that residents do not make it their first business to prepare the soil, plant and cultivate rapid growing trees to shelter these homes for millions of human beings, and scores of millions of animals, whose piteous cries and shivering forms appeal so loudly for the comfort which should and could be easily, cheaply and quickly provided for them.

"The merciful man is merciful to his beast." "The tender mercies of the wicked are cruel." Oh, for an apostle of mercy, with the zeal and eloquence of Paul, to proclaim over the length and breadth of these wind-swept plains the gospel of comfort to man and beast.

Powerful as are the arguments advanced by those advocating timber culture for its use when matured, in my opinion the benefits to be derived in amelioration of climate, would be far greater and sooner realized. Careful investigation of the subject from either standpoint, will satisfy any one that it is a necessary work of huge proportions, the earnest beginning of which has been too long delayed.

Did not Congress make a sad mistake in passing the "Timber Culture Act," that they did not scatter broadcast and give to each applicant for land full directions as to preparation of soil, varieties adapted to different localities, modes of planting and cultivation? The importance of immediate, intelligent prosecution of the work, seems to warrant amendments to the act, one of which should be the appointment of a competent man in each land district to give personal instruction and supervision.

At present, in most cases, the object had in view by framers of the act is not accomplished, and it is respectfully suggested that this Society take steps to bring the matter before Congress at once, urging that provision be made for proper instruction and honest work in the future, by those who avail themselves of the benefit of the act.

The nations of Europe have the planting, care and cutting of forests, specially and minutely, under control of government. Is it not high time that we exercise like prudence?

Prairie can be broken in summer, stirred in the fall, again in spring, putting it in good condition to receive seeds, cuttings or trees. Nut-bearing trees make more rapid growth if the nuts are planted

where they are to remain. There is no difficulty in removing them at one year old, shorten the tap root, and, if intending to transplant afterwards, root-prune once in two or three years.

Nuts for planting should be mixed with layers of soil in the fall, soon after gathering, covered enough to prevent their becoming dry, and not deep enough to hinder their freezing.

It is well to mix seeds of deciduous trees generally with moist loam, and winter in a cool cellar. Elm and soft maple seed should be planted when ripe in May or June. Green ash seed may be kept dry over winter.

Evergreen and deciduous trees for forest planting are gathered in their natural seed-beds, or purchased as cheaply as novices can raise them from those growing them in immense quantities, in some instances by tens of millions. Evergreens of small size, under one foot in height, set on the prairies, should always be shaded the first year.

Any one wishing to engage in the business of growing seedling trees will do well to work a year at one of the nurseries making a specialty of them. If a moderate amount of them only are to be grown, "Bryant's Forest Trees" will prove a valuable aid.

In first attempts in forest planting on the prairies trees were generally set at too great distances apart. Four feet each way is ample space, and trees two to five feet better than taller ones. They should be assorted, and those nearly of a height set contiguously.

No special art or mystery about the work, main points being to have good roots, kept from drying while out of the ground, set as deep or a little deeper than they stood in nursery; fine dirt (not sods) carefully filled in among the roots, and when well covered, tramp *very* firmly, fill in loosely on the surface.

Willows, cottonwoods and other poplars, are readily grown from cuttings eight to twelve inches long, set nearly full length below the surface early in spring; dirt made *very* firm at lower end.

Cultivation should be frequent until late in July each year, until trees shade the ground sufficiently to prevent growth of weeds.

As to varieties:— For the purpose of shelter around the house, barn and stockyards, evergreens should largely predominate, of varieties known to thrive in similar localities, for they are to be found in variety now in all parts of the prairie region, though not so many as one where there should be thousands. If you cannot plant them for this purpose be sure to prepare the ground and plant at the *earliest practicable moment*, in abundance, some rapid growing trees. White willow, maple or cottonwood are good.

The ash family are safe to plant largely. Black walnut will never be out of fashion. European larch, red and white elm are very valuable for certain purposes. Burr and white oak will always be in demand. Catalpa speciosa and butternut are indispensable, but

not recommended for planting much further north. American black cherry was in perfection on North Manitou Island, Lake Michigan, in 1846.

From Nebraska, Russian mulberry, and a native willow said to be durable as fence posts, are recommended.

EVERGREENS.

BY ROBERT DOUGLAS, OF WAUKEGAN.

S. M. Slade, Esq., President
Northern Illinois Horticultural Society:

My Dear Sir—I thank you for your kind letter of January 5th inviting me to contribute a paper in regard to anything new in the evergreen line.

I regret very much that a prior engagement compels me again to deny myself the pleasure of meeting with you.

My experience in regard to what is new in the evergreen line has been very much like navigating a rocky channel without a chart, and as I have not yet reached destination the most I can do now is to point out the rocks and shoals so far as I have gone, so that other navigators may avoid them. Twenty to thirty years ago I tested all the new evergreens that were being imported about that time, and not, in a single instance did I find one of them that would endure this climate for ten years. My next experience was in the way of evergreens from the Pacific coast. That promised better. They succeeded well in the East, and were believed to be hardy. Mr. Meehan, editor of *The Gardener's Monthly*, had so much faith in them that he said in the *Monthly* that any man who would grow the Lawson's Cypress and Nootka Sound Cypress in large quantities, so that they could be used for ornament and for hedges, would be a public benefactor. Well, I went into the public benefactor business very strongly. I found that most of the Lawson Cypress seeds had been shipped to Europe. I sent an order to the party in Europe for all he could spare. Fortunately for me I could only get three and a half pounds, for when I paid the bill, together with a duty in gold of thirty per cent., and a heavy premium on gold, I found that the seeds had cost me $62.50 per pound. I tested all the silver firs, pines and spruces of California and the Northwest for many years, at a cost of from three to eight hundred dollars a year for seeds alone. As a result of all this trial of patience and pocket, I can, perhaps, give you the clearest idea by giving you an account of a trip with our dear old friend, Dr. Warder, about four years ago.

After inspecting the conifers in Cincinnati, Cleveland, Rochester, Boston, Central Park, New York, Philadelphia, Baltimore, and Washington, we had not seen a good specimen of a conifer from the Pacific slope, with the exception of one Douglas fir on the grounds

of David Landreth, Bristol, Pennsylvania, and from the appearance of all the rest of his California conifers one would infer that there must have been some mistake in this instance.

Many conifers will endure the climate of Boston, New York, and Philadelphia, that will never reach the hight of three feet in the West: as an instance, *Abies Nordmanniana* in Rochester, and *Pinus excelsa* near Boston.

Japan evergreens seem to stand better than those from the Pacific. Especially is this the case with the *Retinosperas* in the vicinity of Boston, but I understand that they suffered seriously last winter. During the summer of 1868 or 9 my attention was called to the hardiness and beauty of *Abies Menziesii* (*Picea pungens* of Engelmann), and *Abies Douglasii* (*Pseudo tsuga* of Engelmann), on the grounds of A. R. Whitney. They had stood the winter without injury, while the Norway spruce and even the Balsam Fir and White Pine were browned. On learning that these trees had been brought from the Rocky Mountains, I took into consideration that they had grown in a dry climate, and would be more likely to endure our climate than trees indigenous to the moist climates of Europe and the Pacific coast. I found trees of these two species growing at several places in Iowa, Kansas, and Nebraska, and all doing finely, some over twenty feet high, that showed by their annual growths that they had started every year from the terminal bud since the time they were brought from Pike's Peak during the gold excitement. I then went to Colorado and examined the trees in the mountains, and was more pleased with them than ever. I hired a man to collect the seeds. When he had collected a great many cones, and had hired storage for them at the base of the mountains, on close examination he found that the seeds had shrunken, and sent us a sample. My son started immediately for the mountains, and when there, after a most thorough examination, he found that every seed was imperfect; and since that time, 1871, we can only count three years that one or the other of the firm has not been in the mountains, yet we have not succeeded in getting seeds but three times.

I went up into the mountains last summer, but found the trees were not seeding. However, our collector found the trees seeding in another locality several hundred miles distant, and collected a large quantity of seeds with the help of several men. He fortunately succeeded in forwarding us about a fourth part of the seeds when a heavy fall of snow filled the cañon, so that the remainder of the seeds must lie there till spring. I am far from being discouraged, for I have at least paved the way for others, and I am confident that the time will come when these valuable trees will beautify our noble prairies.

Aside from the two species named we have tested many other conifers from the Rocky Mountains, among which are *Pinus Aristata*, or *Balfouriana*, *Pinus contorta*, *ponderosa*, *flaxilis*, and *Pinus*

pinon, or Nut Pine, also *Picea Engelmanni*, or Engelmann's Spruce. *Abies Subalpina*, and *Abies Concolor*. *Abies Concolor* is a beautiful silver fir, and so far proves perfectly hardy and satisfactory in every way, after testing it six years. All the rest named are unsatisfactory. *Pinus ponderosa* is perfectly hardy, a beautiful tree and a rapid grower, but is so infested with the fungus that is sometimes seen on the Austrian pine that it should not be propagated.

The Nut pine has its northern limit at Pike's Peak, and is not hardy here. *Pinus Aristata*, *ponderosa* and *flaxilis*, also Engelmann's spruce and Subalpina, are all fine trees in the highest altitudes, up at the timber line, but are never found at lower elevations, and we have found, after thorough trial with thousands and thousands of seedlings grown in our nurseries here, that they fail after the second or third year. The Engelmann's spruce is partially an exception to this, as it will grow, but very slowly, and it is little or no improvement on the white spruce, which it closely resembles.

I had such an anxiety to introduce the Engelmann's spruce into cultivation, that after finding from experience that seeds from the timber line were not satisfactory, having seen that Prof. Aughey, state botanist of Nebraska, reported it as growing in Northwestern Nebraska, I went there to see. I thought it possible, though not probable, that it might have crept down to that altitude, but that whatever it might be it would be an acquisition. I went, and in company with my son explored the region thoroughly, and up into the Black Hills, where Prof. Jenny told us we would find *Engelmanni*, but only on the highest altitude of Harney's Peak. We wended our weary way thither only to find that it was our own white spruce, growing even to within fifty feet of the very summit of the peak. This tree *(Alba)* has never been thoroughly appreciated in the West, as it has been confounded with the glacous-leaved black spruce, which sheds its lower limbs, and is only fit to grow in swamps, where it is generally found.

The white spruce holds the foliage on its lower limbs better than the Norway spruce, is a better color for most people's tastes, and is certainly hardier, for the Norway spruce often browns in the winter while young, in the West, and the white spruce never does. The white spruce has a wider range than any other evergreen, unless we may have to except the red cedar. It is found in the mountains of Virginia, and all the way from Maine to out through Wisconsin, Minnesota, Dakota, Montana, and northward and westward through the British possessions till it reaches the Pacific coast in the far north.

Mr. Minkler — Four of our co-workers have been called away, all of them very dear to our hearts. I move you, sir, that we appoint a committee to write up resolutions in honor of the memory of Arthur Bryant, Sr., Dr. Warder, Prof. Tice, and Mr. Baldwin.

The President said he would appoint the committees later in the day.

DISCUSSION ON THE TWO PAPERS.

Mr. Kellogg — I consider the last papers very valuable, as they were experiments of benefit to all, and I move that a vote of thanks be tendered Mr. Douglas for his paper. The evergreen shelters about our houses are very important things. Let the farm be surrounded with shelter belts. I think that a single row of trees around a forty-acre field enhances the value of it very materially.

Mr. Minkler — We begin planting with small trees and set them thick for effect, and when they grow up they get too thick, and should be thinned out, but we are tender-hearted and do not like to cut down a nice tree, so many of our homes have too many trees about them. What is handsomer than a Norway hedge? It is always green and beautiful. It holds its base well and stands the shears better than most any other evergreen. Mind and keep your base in starting a hedge, and don't plant too thick. Some plant one foot apart and some eighteen inches, but I doubt if you ever get a fence in that way. I would never plant any fence nearer than four feet. After one or two years it is grown together, and the roots have a soil to work in and grow strong and do not crowd one another, so that in a few years you have a perfect and beautiful fence. For wind-break Norway spruce is the very best, and nothing you can build makes as good a hen-house. You can plant white pine around your farm for fence posts and stretch wire on them, which makes you a good fence.

Mr. Whitney — I have white pine, Norway spruce, balsam fir, and others, with wire on them for fence.

Mr. Woodard — Twenty-five years ago I planted on my place Norway spruce and arborvitæ hedges, and they are as fresh and handsome to-day as they ever were. I have a good many large evergreens on my place that were planted at the same time. I would not take twenty-five dollars a tree for them. My home would be ruined if the hedges and evergreens were cut away. Hemlock makes a good hedge also. These home-features grow dearer to my wife and I every year as we grow older. If we would plant more trees around our farms they would look more cheerful and home-like.

Question — What varieties of trees are best to plant for hoop-poles?

Mr. Whitney — We are using a good many hooppoles made of green ash.

Question — Is it necessary to have the old heartwood of the catalpa to have it last?

Mr. Whitney — No. It will last well if cut at the right time, if it is not all heart-wood. All soft wood does best cut in the month of August. I have had Norway spruce cut in August last eight years, and come out sound. Had the same experience with sweet chestnut and yellow poplar, that were cut in August and left to season. I have seen white willow that was cut in August last well. European larch cut in the spring will not last good. I cut American larch long enough for three posts and put in my cider-house, which lasted twenty-three years (August cutting), and other posts that I cut in the spring, of the same larch, only lasted little over a year.

Mr. Kellogg — That is the best speech I ever heard Whitney make. I believe our native tamarack are most always cut in the winter; if that is the case it is a very valuable thing to know that the proper time for cutting is in August.

Mr. Minkler — I consider Mr. Whitney's information a very valuable thing, and if our farmers would bear it in mind it would be a great acquisition to them.

Mr. Whitney — The reason for cutting in August is that the tree has the least sap in it at that time of any time in the year.

Hon. M. C. Hunt, Chicago, Ill., President of the American Association of Nurserymen, Seedsmen and Florists, was introduced and made a few happy and appropriate remarks, extending a very cordial and pressing invitation to the members of the Society to attend the meeting of nurserymen, seedsmen and florists to be held in Chicago next June.

THE YEAST PLANT.

[*Saccharomyces Cerevisæ.*

BY MRS. DR. HARRIS, OF GALENA.

To the Horticultural Society of Northern Illinois:

We have no intention, in the present writing, of wading very far into the deep waters of bacteria and Pasteur's germ-theory of disease; nor do we purpose to take sides with either germ-theorists or anti-germ-theorists of the medical fraternity; neither do we desire to press upon your attention a matter that is far-fetched or of little practical utility.

The Yeast Plant, it is well known, is at present understood to be the natural and legitimate parent of *vinous fermentation*—that chemical process which represents the first stage of "spoiling" of fruits that are canned, or otherwise preserved or conserved, with or without cooking. This "little giant" is the great factor upon which the brewer, the distiller, and the wine-maker depend for their stock in trade. Without its agency beer would not be fermented, alcohol would not be alcohol, nor would wine be produced from the juice of the grape. (Suppose we turn it over as an offender to the W. C. T. U.'s.)

To the horticulturist, at least to him who depends upon canning his garden products for market, this tiny organism is of very great importance, not as a friend, but as a foe. Since fruit and vegetable canning is rapidly growing into an immense industry, one by means of which we Americans are aiming to supply the world with the perishable products of our soil, products which, but for said canning process, would be left largely to waste upon our hands, those microcosms which influence said process and affects the quality of the goods in question, compel us to treat them with respect. Under these considerations we have thought that a brief, though rude, sketch of the present STATUS of the yeast plant in science and practice might not be deemed uninteresting.

Ever so many years ago chemists were greatly puzzled to understand *spontaneous fermentation*, viz: to know why the carbon and hydrogen and oxygen of sugar (particularly grape sugar) should, of their own free will, when moisture and a suitable temperature were present, get up a commotion evolving gas and heat, and presently rearrange themselves into a different combination, forming an entirely new substance, *alcohol*, which latter substance, upon analysis, was found to contain the same chemical elements in the same quantity and proportion (or very nearly so) as did the original sugar. In homely phrase, they were suffering to know what set the machine in motion.

In 1680 a German "with a terrible name which nobody could spell," etc., introduced the microscope into the discussion of this

question. He examined yeast and the must of beer and other ferment substances, and found the "thick, pasty fluid to consist of grayish globules from $\frac{1}{3000}$ to $\frac{1}{1000}$ of an inch in diameter. As soon as fermentation begins these corpuscles move about in all directions, enlarge and become covered with projections, which finally drop off and become independent corpuscles, and repeat the same operation so as to increase the quantity of yeast to an extent limited only by the quantity of malt infusion employed." Here we have a perfect picture of vegetation of the lowest order of organic life, viz: a simple protiferation of cells, the reproduction being by budding—not by fruiting.

At this point the subject rested mainly, and was almost forgotten until about the year 1838, when Schwann and others revived the question, and to microscopic examinations added many interesting and satisfactory experiments, all of which went to prove that the microcosm already described was a true and distinct vegetable organism, that it flourishes best at a temperature ranging from 68° to 75° Fahrenheit, that the vitality of its germs is destroyed by a boiling heat, and that said germs may be, and often are, supplied by the atmosphere in which they float, like the germs of other fungi.

It seems that it is not the simple presence of the yeast plant in the proper media which causes fermentation: it is in the vegetative process in active progress that the fermenting principle is evolved, in like manner as the germination of barley yields diastase, by the influence of which starch is converted into sugar in the process of malting. In fact, "in *bread-making* some of the starch is converted into dextrine and this into sugar by the ferment." Thus is our analogy between the malting of barley and the ferment of the yeast plant supported.

This much for theory. As a practical fact, every housekeeper knows that ferment, in the form of dried yeast, may be kept dormant for an indefinite period, but when placed in the presence of moisture (she soaks her yeast cakes) and a moderate degree of warmth (she sets it near the fire) it becomes an *active* ferment, capable of transmitting its quality ("the leaven leavens the whole lump") without limit. She knows that if her bread or yeast is set in too hot a place it is scalded and its rising quality killed (the germ of the yeast plant is killed). She knows that if her cans and jars of fruit are not sealed "boiling hot," the most careful previous cooking will not prevent their being spoiled by fermentation. (The cool air re-entering before the can is sealed brings fresh live germs of fungi with it.) She knows that if light as well as air is not excluded, mould, an *aerial-growing* fungus, will very likely make its appearance upon the surface of the fruit. (The yeast plant only flourishes when *merged* or *submerged* in fluid or semi-fluid substances.)

This brings us to another and very different fungus which the fruiterer has to contend with. As moderate boiling does not pre-

vent this growth of mould, it is just to infer that its germ requires a higher temperature for its destruction than does that of the yeast fungus. In considering this second fungus light becomes an important factor, and the question whether we shall seal in glass or in tin is a question in order. Certain it is that thirty years ago, when we bought our fruit in glass bottles sealed with caps and tin foil, we had a very inferior article to that we now have in tin cans.

The subject of microscopic fungi is a deep and obscure one at best. No doubt there are many and yet more infinitisimal organisms yet to be discovered, very likely parasites of those we now discuss with so much care and pains.

"Great fleas have little fleas
Upon their backs to bite 'em,
And little fleas have lesser fleas,
And so *ad infinitum*."

The President appointed as a committee on resolutions in honor of the memory of Arthur Bryant, Sr. and Mr. Johnson, Messrs. Minkler and Scott, and on Dr. Warder and Prof. Tice, Messrs. Scofield and Graves.

Committee on programme for to-morrow morning reported business as follows:

1st. Orchard Culture, by Arthur Bryant, Jr., of Princeton.

Discussion.

2d. Plums and Cherries, by D. W. Scott, Galena.

Discussion.

3d. Berry Culture, by E. C. Hathaway, Ottawa.

Discussion.

4th. Vegetable Gardening, by Geo. S. Haskell, Rockford.

Discussion.

5th. Grapes and Grape Culture, by D. J. Piper, Foreston.

Discussion.

6th. Query Box.

On motion the Society adjourned until Wednesday morning at nine o'clock.

SECOND DAY — Morning.

The meeting was called to order at nine o'clock on the morning of Jan. 23d by the President, and at his request Mr. Kellogg opened the meeting with prayer.

ORNITHOLOGY.

BY A. L. CUMMINGS, GALENA.

"I pray thee know me when we meet again."

This request for identification in the case of birds is far more easily made than observed. So much practical difficulty is experienced by those studying the habits of living birds, in the identification of different species of the same genera (not to speak of varieties of the same species), that the announcement, some years since, of a forthcoming treatise by means of which plain farmer boys would be able to recognize and classify all our familiar birds, excited great interest. No doubt a treatise might be written affording great aid in this direction, and it is much needed.

The difficulty, of course, does not lie in the direction of those familiar birds whose characteristics are so plainly marked that the comparison is less one of resemblances than of contrasts. Many of these need but appear to be immediately recognized. The robins, bluejays, blackbirds, bluebirds, catbirds, and many others whose names will at once occur to us, are not liable to be mistaken by any one wherever seen: while the sparrows, quite as familiar as those, range through gradations of size and color from the little chippy that gathers crumbs in our dooryards, to the swamp sparrow, one of the largest and most distinctly marked of this large family. Many of those properly classed as finches and buntings also bear such marked resemblance to some of the sparrows as to further increase the difficulty of recognition.

We hope it will be borne in mind that we are speaking of living birds, of which we get but passing glimpses, or at best, a somewhat distant view of them while at rest. Could we handle them, and carefully note the technical distinctions, as we do the cabinet specimens, most of our difficulties would disappear: yet even in the collections there are instances "where doctors disagree" as to the place to which individual specimens should be assigned. Many slight differences have been made the foundation of new varieties, or even new species, which other ornithologists, equally learned, insist are but individual peculiarities, rejecting the new name and classification altogether. Other ornithological differences are still undecided, of which we will

only instance the one of Colaptes *hybridus*, so named from the supposition of its being a cross between Colaptes *auratus* and *Mexicanus*, treated at large by Dr. Coms in his Handbook of Northwestern Ornithology, pages 293-294. The golden-winged woodpecker *(auratus)* has its bright yellow replaced by orange-red in *Mexicanus*, and the supposed *hybridus* seems a connecting link, partaking of the characteristics of each. Dr. Coms says: "Dr. Hayden's numerous examples are principally those that enabled Prof. Baird to elucidate one of the most remarkable cases in American ornithology — the perfect intergradation of two such distinct species as *auratus* and *Mexicanus*. This author adopted, without qualification, the hypothesis of hybridization, remarking, in proposing the name *hybridus*, 'By the above name I intend to cover a remarkable series of woodpeckers from the Upper Missouri and Yellowstone, combining the characteristics of *Colaptes auratus* and *Mexicanus*, in proportions varying with almost each individual, and leading irresistibly to the conclusion that they are the descendants of originals of the species mentioned above, mixed up by interbreeding of successive generations, to a degree unparalleled in the annals of ornithology.'" Dr. Coms adds: "If there ever were a case of hybridization to an unlimited extent, resulting in fertile offspring that again and again interbred, this would appear to be one; and it has been so accepted by orithologists without hesitation." But he proceeds to question the soundness of the theory, and mentions a statement of Mr. Allen, that Floridan examples of *C. auratus* sometimes show red touches in the black maxillary patches; and of Mr. J. H. Batty, who tells of a New Jersey specimen got a few years since, with mixed red and black cheek patches, from which he concludes that these variations cannot be due to hybridization, as the *C. Mexicanus* is never found in the neighborhood of New Jersey or Florida.

This discussion is interesting and important as showing how the different species may approach each other in characteristics by natural process of evolution, and yet the changes and variations fail of forming a fixed type. It also tends to show some of the difficulties in the way of identification of individuals that vary from the recognized characteristics of their species. Some years ago the tendency was towards making the most of these variations in the way of new varieties and even new species. Later discoveries, coupled with more careful examinations, have reduced several of these supposed new varieties and species to individual variations from the usual type of well known species, while in two or three instances two supposed distinct species proved to be but male and female of the same species.

The design of classification is, of course, to aid in identifying species of individuals. If confined within proper limits it is not only an aid, but a necessary one. But when it is reduced to the shading of pin feathers, in order thereby to subdivide and multiply species, we submit that it tends only to confusion worse confounded. To

illustrate our meaning we will take the Vireos, of whom Dr. Coms reckons thirty species, many of which vary so little from each other that the most minute scientific examination of specimens is necessary to determine to which species they actually belong. Of course their identification as living birds is quite impossible when such critical examination of specimens becomes necessary. These species can be distinguished from others most unlike them, but few of them can be certainly so distinguished from those nearest them in points of description.

On this point we quote from Dr. Coms' Key to North American Birds, page 118. "Genus Vireo.—The numerous species of this genus have been divided into several groups, but no violence will be done by considering them all as vireos—in fact, it is difficult to do otherwise. For even the seemingly substantial divisions into two genera, according as there is an evident spurious first primary, or apparently none, separate species, like *gilvus* and *philadelphicus*, hardly otherwise specifically distinguishable; while another division into two genera according to shape of the wings and length of the spurious first primary, or its absence, is subject to some uncertainty of determination, and unites species like *olivaceus* and *flavifrons*, most dissimilar in other respects. The fact is, that almost every species of *Vireo* has its own peculiar form, in shape of bill, proportions of primaries, etc., and these details cannot be considered as of more than specific value."

In the above extract Dr. Coms (one of the best authorities) evidently disapproves of making such slight variations into generic differences, and more than intimates a doubt whether such slight differences should separate *gilvus* and *philadelphicus* into distinct species. Science should be exact in its premises and its deductions, leaving no room for doctors to disagree: and in so far as it falls short of that exactness it is not science.

What does the spurious primary above referred to indicate but a degree in evolutions between the primary and its absence. If so, it seems hardly worth while to dignify each degree of change in the progress from one fixed type to another, (if that can be properly called *fixed* which is changing from type to type), by naming it a new genera, or, on slight differences, a new species. The answer to this query will depend on the ascertained practical aid or hinderance to identification to be derived from the minuteness of these subdivisions used in classification. There are stages in every science during which each new discovery is hailed as an onward step, entitling the discoverer to a higher plane than any hitherto occupied. This condition of things has its advantages as leading to much that is new and valuable in science. On the other hand it has its disadvantages as leading to the introduction of errors, which must be eliminated.

If the identification of birds depended wholly upon the distinctive differences noted by the eye, we should be more often puzzled

than we now are to place them properly. But the ear often aids the eye, especially during the season of song. Their notes are far more variant and distinctive than either size, form, or plumage. Individual peculiarities are less observable in their notes than in their appearances; and yet they differ much in song. It is not often that an individual can be identified by such peculiarities, yet instances of individual identification sometimes occur. A pair of robins spent their third year with us last season, of whose identity the writer has not the slightest doubt. They are a peculiar pair, the female being larger and of lighter color than usual, besides having a protuberance on the left breast, produced by some serious injury, very likely caused by a missle from the hand of some thoughtless boy. The male is rather under size, but of elegant form and jaunty air, with a very red breast. He has also a peculiar third note, coming in occasionally, at almost regular intervals, before his "cheer up," in quite a noticeable way. He is fond of singing, but quite averse to domestic duties, especially disliking taking his turn at hovering the eggs during the process of incubation; for which disinclination he often gets soundly cuffed by the wings of Madam Robin before he will obey instructions. Even when driven to the nest, the writer has often seen him "sit standing" as soon as madam has gone for her breakfast, chirruping lightly and softly until caught at it by his better half, who then returns and administers another cuffing before full obedience is secured. Can I doubt the identity of the pair when all these peculiarities appear each season? There are probably no divorce courts among the feathered tribes, or surely this poor henpecked husband would long ere this have been set free from his domineering wife.

I could narrate some other instances, though less striking, of established identity. It is only the dullness of our sight, or the want of careful observation, which requires such strong and peculiar proof to establish their identity. They doubtless, with their keener sight, note each other's peculiarities of form and feature, and readily distinguish each other at a glance.

The infinite variety of size, color, form, and feature, by which they distinguish each other, is the greatest difficulty in the recognition of individuals as belonging to their proper species. There is no duplication in Nature's processes — no two of her creations, either animate or inanimate, are exactly alike. That we are often unable to note the exact differences argues only the limitation of our faculties, not the lack of opportunities for their exercise. We may not always be able to note the exact differences that exist in the human face, yet we are conscious of their existence whether or not we are able to define them.

The last season was unusually favorable for studying the habits of birds, owing to the lateness of the season and the bareness of the trees for weeks when they are usually covered with foliage. It was

quite generally remarked how abundant were the birds, both in numbers and variety; yet when the trees were fully clothed with foliage they seemed only about as usual. At first they lived out of doors — the leaves afterwards were their tents, in which they dwelt secure from observation. Birds are always abundant whether we note them or not. We should soon note their absence by the increase of loathsome insects of which their presence happily rids us.

DISCUSSION.

Mr. Thomas — The paper may be very interesting, but think it has failed to give us any practical information. I should like to hear some discussion on the subject.

Mr. Minkler — I think the gentleman will find the desired information in Prof. Forbes' paper in the State Society Report. I am sorry that our reports are not more appreciated by the masses of the people. We come together twice a year at our own expense for the disseminating of knowledge for the whole, that we may make our homes better and enlighten the people. Every library in the country ought to have our volumes in it, and I should like to hit upon some plan whereby they could be disseminated among the masses of people, schools, etc. The volume only costs one dollar, and there are many valuable and interesting papers in them that are worth much more than the price of the book.

Mr. Cotta — I am much pleased with the remarks made by Mr. Minkler on the distribution of our volume. It should be in the house of every farmer, and it seems to me that there is a lack of knowledge among our farmers as to what we are doing. Is there no way we can get the more intelligent farmers of our country to become members of our societies? Would it not be a good idea to send circulars to some of our best farmers giving an account of our volume, and the good contained in it, terms, etc.?

A motion to that effect was offered but deferred to time of unfinished business.

Question — Is there any good in the English sparrow, or has any one seen him in the country?

Mr. Minkler — I have noticed that they are getting rural habits; have seen quite a number at my place in the country.

Question — Does it do any harm?

Answered by Mr. Whitney — Yes, it does harm by driving other birds away.

Mr. Hallett asked if we had the genuine English sparrow?

Mr. Kellogg thought not — that it was the wrong kind.

Mr. Hill — So far as I have observed they are the genuine English sparrow, and our brother Englishmen would be glad to send them all over to us.

ORCHARD CULTURE.

BY O. B. GALUSHA.

"There is nothing new under the sun," saith the proverb. Every occurrence may be but the repetition of a former one which had an existence in some cycle of recurring phenomena in the more or less remote part; yet we know that combinations of natural elements and natural causes are yearly occurring which are new to us, and which demand investigation if we would be benefited by them. Hence, in our favorite art of horticulture we have ample scope for observation, and find enough that is new to give sufficient variety to our modes of treatment of soil, tree, plant, and insect and other enemies to redeem our labor from monotony, and our minds from dullness incident upon working continually in the same treadmill, and thinking in the same intellectual ruts.

It is true that the fundamental principles underlying orchard culture, as well as all culture, are immutable; yet constant study is required to adjust our methods to the ever-varying conditions surrounding primal law, and through which only we can work in accord with it.

It cannot be said, then, that if we write upon orchard culture we can but "repeat the old, old story." At least it must be the "old song" with variations and new accompaniments.

The year 1883 will long be remembered, by those who live to remember, as a year replete with unusual meteorological phenomena. The intense severity of the cold during the winter of '82–'83 damaged the orchards to an extent surpassing that of any winter since 1855–'56. Many varieties of apple trees formerly considered hardy were either entirely destroyed or so badly damaged as to be of no value hereafter. Ben Davis, Domine, Minkler, Rawle's Janet, Wagoner, Winesap and some others, are either dead or in a precarious condition; and the equal severity of the winter of 1883–'84, through which we are now passing, will possibly nearly complete the destruction of these, and still farther impoverish the condition of many other sorts hitherto considered hardy, which were also somewhat damaged.

Hence the first question which confronts the orchardist in Northern Illinois is, Shall I replant to fill the vacancies, and if so, what varieties can I trust? I would reply, yes, replant. Dig out the roots of dead and badly damaged trees, put a half-wagon load of good soil (not manure) into the excavation, plant such varieties as have best resisted thus far all adverse climatic conditions, and cultivate the orchard thoroughly with plow, harrow and corn cultivator, beginning as soon as the trees begin to push out their leaves, and continuing till the middle of July. Of course the plowings should be shallow so as not to break many of the feeding roots, and the use of the harrow and double-cultivator often repeated during the time. If the ground has been cropped for several previous years without manure, this should be applied before cultivation is commenced, covering the entire surface alike. Barnyard or stable manure is best.

The varieties to be planted either in a new orchard or in filling vacancies in an old one, should be few in number and confined, as already stated, to such as have hitherto endured hardships well, and also such as are adapted to the needs of the planter's family. The planting of large orchards for commercial purposes in Northern Illinois is, to say the least, a branch of horticulture promising small returns. Yet every land-owner may and should grow apples as well as small fruit sufficient for his own family.

I will name a few of the sorts which may, I think, be planted with a reasonable prospect of paying results:

Summer — Sops of Wine, Tetofskey, Duchess, Benoni, Red Astrachan.

Autumn — Fall Winesap, Fall Swaar, Snow, Cayuga Red Streak, Wealthy.

Winter — Roman Stern, Grimes' Golden, Golden Russett, Willow Twig, Salome, Talman's Sweet, Wythe, and probably Yellow Transparent and some others of Eastern or Russian origin.

In planting new orchards young low-top trees should be selected. Do not "trim up" so as to allow a team to pass under the trees. Plant wide enough apart to admit of cultivation for many years between the rows each way — not less than thirty feet; lean the trees toward the two o'clock sun in planting; prune *very* sparingly, if at all, and only to prevent forks or crotches at time of planting, and to prevent chafing of branches afterward.

Cultivate the ground for at least five years, then seed to clover — never to grass — and allow the clover to fall and remain upon the land. Damage from mice may be avoided by throwing a few spadesful of earth around the base of each trunk in fall to be scattered in early spring.

Hunt for and destroy with knife the borers, going over the orchard in July and early September. Their whereabouts can always be detected by their saw-dust like excrement. Spray the trees with arsenic water when in full bloom, by use of a garden engine or force

pump elevated on top of high wagon-box, and driven along each side the rows. A pound of arsenic to forty gallons of water thus applied will keep off the codling moths and destroy leaf-eating insects. This has paid a larger profit on cost of material and application than any other horticultural operation. Three car-loads of apples from an orchard thus treated for several successive years, were examined last fall, and *but one wormy apple found!*

In many portions of Northern Illinois and Southern Wisconsin the soil is thin and the sub-soil gravelly and very porous; and in all such lands thorough surface cultivation for a few years, and mulching afterwards, seems the only way to secure reasonable health, productiveness and longevity to apple orchards, and the practice of allowing clover to fall and remain upon the ground is the easiest and probably the most effectual way to afford both food and clothing, and at the same time inducing the growth of roots near the surface. Trees so treated will be in better condition to withstand excesses or drouth in summer and cold in winter than those in orchards which are closely pastured or starved by continual cropping with cereals.

Small orchards comprised of one-half Early Richmond cherries and one-half De Soto plums, will be found generally profitable under similar treatment. It is advantageous, however, to plant these where domestic fowls will range through them.

ORCHARD CULTURE.

BY A. BRYANT, JR., PRINCETON.

I sometimes think that many of our subjects are rather stale and nearly worn out, making it difficult to write anything that will be of interest to those who listen to us, but when I remember that each volume of our transactions has many new readers that are anxious to gain the very elementary knowledge in horticulture that we have studied and learned years before, the necessity of repeating the directions and methods of proceedure is very apparent.

The topic assigned me is one that has been written about and discussed a great deal, and still one that interests every person that owns a few acres of land. The where, how, and what to plant, are always very essential questions to be decided before beginning work.

Recently various writers in agricultural and other papers have been advocating planting the apple on low lands, citing various instances of orchards on such locations that are in much better condition than others in the immediate vicinity on higher ground. The term high and low lands, as applied to the land on our streams and rich prairies, mean very different conditions of soil and surroundings of an orchard planted on them. While the orchard planted on the bluffs would be likely to suffer in a dry season from lack of moisture, we think that one planted on high prairie, unless underlaid by a

gravelly sub-soil, would be all right. The level bottom lands of our streams, with free surface drainage and soils which seldom hold a surplus of water, should not be compared with the low flat lands of our rich prairies, which naturally have a clay sub-soil that is slow to part with its excess of moisture, and whose surface drainage is tardy and incomplete. I certainly should not recommend any one to plant on the last-named situation without very thorough drainage, and at present I am not fully convinced that such locations are desirable even with thorough drainage. No soil that is liable to be saturated with water for any length of time is suitable to plant trees or any kind of fruit on.

Formerly most western writers recommended twenty-five feet as the proper distance to plant the apple, some even advising closer planting. Lately we see many writers advocating thirty to forty feet, attributing much of the decline and unfruitfulness of our orchards to the close planting and lack of nutriment for the trees in the soil. Evidently the idea is gaining ground that we cannot look for paying results from our apple orchards for more than twenty to thirty years after planting. That most orchards at that age are more or less in a decline. The fruit is usually not as fine as on younger trees, and the cost of gathering is much greater. To sum up the matter, it is more profitable to plant a new orchard every twenty or twenty-five years than to renew and care for the old one. If this is the course to be pursued, twenty-five feet is ample distance for the upright-growing varieties, such as Ben Davis, Jonathan, Maiden's Blush, Astrachan, etc. Willow Twig, Minkler, and other spreading growers on strong soils will need more room.

The selection of varieties to plant is one of the most important, as well as difficult tasks, the planter has to perform. If there are any successful orchardists in his vicinity, consult them. Get your trees of the nearest reliable nurseryman and get his advice.

I will give a list that are good in my own locality but may not be the best for all:

Summer — Red Astrachan, Duchess, Sweet June, Dyer.

Autumn — Maiden's Blush, Ramsdell's Sweet, Bailey Sweet, Wealthy, Snow.

Winter — Jonathan, Ben Davis, Willow, Domine, Fulton, Wagener, Broadwell.

There are many other varieties that are fully equal to these; many, in some respects, better, but it is usually not best to plant too many varieties, especially of winter apples. It is difficult to keep them separate, and mixed lots neither keep or sell as well as all of one variety. I will not name a list for market, though if I were to name any, they are all included in the above list. Any one intending to plant a commercial orchard should learn what *his* market is likely to call for and plant accordingly.

The ground for an orchard should be very thoroughly prepared: if for spring planting, would be best done the fall before. Most western planters seem to prefer the spring, though I know of several successful orchardists who plant in autumn. If spring is your choice, plant early and do your work well; if autumn, do it when the ground is moist and in nice order — *if dry, wait.* When setting your trees see that the soil is filled in close around the roots, leaving no cavities under the tree; press the earth very firmly around the roots, the harder the better if the ground is dry. When nearly finished filling around the tree throw in a pailful of water, allowing it to settle away, then finish filling the hole, mounding the earth a little around the tree. When finished the tree should lean a little to the southwest to counteract the effects of the prevailing winds in summer. The orchard should be cultivated for several years, growing some crop that will not interfere with the trees and which needs attention through the summer. After the trees get well grown the ground may be seeded to clover and used to pasture a limited number of sheep or hogs. My own opinion is that the grass grown in an orchard should be allowed to lie on the ground; that no orchard will be likely to give good results, especially in dry seasons, that is mown or pastured closely so that the soil is bare, or nearly so, through the hot weather of July and August. Much of the injury and decay of our apple orchards can be traced to extreme drouths followed by severe cold. It would seem that this might, to a certain extent, be remedied by allowing the grass or other vegetation that has grown on the soil to stay there, thus protecting the roots from these extreme changes.

There might be much more said on this subject especially in regard to cultivation and treatment of the young orchard, pruning, and the methods to prevent the ravages of insects, care and handling of fruits, but I think that I have consumed enough of your time, and will close, merely saying that I think that we should not be too much discouraged in trying to grow fruit, especially for our own use. We surely have had a number of unpropitious seasons, but I think that there is a better time coming, and that anyone who plants now will receive better rewards than we have for the last five years.

Mr. Hallett wished the Secretary to note that he was not opposed to planting; he advised every one to plant for their own family use, and he should keep on planting, for he would not be without an orchard, but would not plant for commercial purposes.

Mr. Minkler — I think the whole subject of orchard culture is summed up in the two papers which have just been read, and I see no need for any discussion on the topic. Solution for sprinkling apple trees is one pound of arsenic to two hundred gallons of water.

Question — What are the best five varieties of apples for family use?

Answer — Ask your neighbor.

Question — What are the best twenty-five varieties?

Answer by Mr. Kellogg — I think you will find the best twenty-five varieties in the two papers by Messrs. Bryant and Galusha. I have no list for five varieties. Adaptation of soil is the key-note to success in all fruit growing.

Dr. Small — Of the poisons mentioned arsenic is to be preferred to Paris green because more soluble and cheaper. In the proportion advised, one pound of arsenic to two hundred gallons of water, it is perfectly soluble, whereas Paris green is insoluble, merely mixing with the water and is liable to clog the rose of the syringe or force-pump used.

Dr. Tefft — So far as my experience has gone, arsenic is very hard to dissolve in water, and I use Paris green because it dissolves better. I lost my orchard by the canker-worm before I knew what to do. I finally succeeded in destroying them by the use of Paris green.

Dr. Williams thought that Paris green was more soluble than arsenic.

The President announced a recess of fifteen minutes, after which the meeting was called to order, and Dr. Small read resolutions from the Kankakee Horticultural Society extending a cordial invitation to this association to meet at Kankakee at its next annual meeting.

REPORT OF COMMITTEE ON TREASURER'S REPORT.

Mr. Graves, chairman of that committee, reported:

Your committee have examined the Treasurer's Report, with the vouchers and other papers accompaning, and find the same correct.

H. C. Graves,
George Thompson,
Committee.

DISCUSSION.

Mr. Scott — I very reluctantly tried some of the DeSoto plum. They have borne me three successive crops, and I have had some of them grafted and planted for my own use. I have the DeSoto and Miner planted in the same vicinity; the former has a thicker and more glossy leaf than the Miner and belongs to the *Americana* family. The Miner belongs to the Chickasaw family.

Dr. Williams — I had a few very fine plum trees set that bloomed very profusely, but I got no crop. The next year I fumigated the trees with sulphur and got a full crop. I think that it is destructive to the curculio.

Mr. Kellogg — I have seen the DeSoto plum and it seems to bear younger than the Miner, and continually. I think Mr. Scott is correct on it.

Mr. Scott — I did not wish to advise general planting of the DeSoto. It has done well with us in our locality and I think it worthy of at least a trial; farther than that I do not wish to recommend it.

E. H. Ricker — I would like to call the attention of the Society to a new cherry we have here. The tree has given us a good crop every year that the Richmond has, and proves hardy. It has not been disseminated much as yet. It sells on the market at double the price the Early Richmond does. It is much sweeter and more meaty. Is called Webster's Early Sweet.

BERRY CULTURE.

BY E. C. HATHAWAY, OF OTTAWA.

Mr. President and Members of the Horticultural Society of Northern Illinois:

It is not with any spirit of satisfaction, in view of last year's results, that I attempt at this time to relate to you anything new or surprising in relation to berry culture.

By no new methods employed have we been able to combat successfully the attacks of the hoary-headed enemy who invaded our plantations last May and June. No new varieties, in my experience, that have been hardy enough to make a crop when assaulted by a temperature of from six to eight degrees below the freezing point.

and that during the period of blooming. As such was the existing condition of things here last season, therefore the cause of my uttering these expressions.

There was no complaint to be made of the prices which small fruits brought in the markets in my locality last year. Oh, no! But with all the big prices the amount of the receipts didn't overburden any grower of my acquaintance. Had I a full crop, at the prices obtained however, I *might*, quite likely, have now become a "bloated bondholder" or "*sich;*" but from such a misfortune kind nature fortunately (?) rescued me. If it was a question as to how to grow vines regardless of fruit, then I might spread myself in the endeavor to enlighten this Society. But what do we want vines for without fruit? and as I can grow the vines, but have — yes, for two years — failed to grow profitable crops of fruit, I guess I'll sound this Society for a little information.

I desire to find some good — or if it is not very good it does not matter much — strong-growing, hardy variety of strawberry; one that is as prolific in the production of good sound pollen as the Wilson for instance; that can stand grief enough that when one set of blossoms are killed by the frost it will throw up another set, and will still continue so doing as long and as often as they may be cut down or destroyed by the late spring frosts. I want such a variety to plant alternately with the Crescent to fertilize or fecundate its imperfect flowers; and if I can only find such an one, then I will settle down on those two varieties *for money*, and leave the others, old and new, for somebody else to experiment with.

The blossoms of the Crescent, with the young fruit, were frozen down three times last season, and each time she threw up flower trusses and bloomed again, and had the frosts continued she might have kept on blooming all summer. I have always had faith in the Crescent since I first saw her, and I am not going to give her up yet. If I only had a *gentleman gallant* as hardy and persistent in blooming as she to stay with her, I know I would get fruit even if it took all summer. Now, is there any variety that is perfect flowering that will fill the bill? With me, Captain Jack comes the nearest to perfection as a late bloomer of any I have thus far seen or tried, but he can't stand much frost while in bloom.

Currants were the most profitable of any of the small fruits which I raised last year. The quantity was about the average, and they sold in Chicago at an average price of one dollar and a half per crate of sixteen quarts. Currants seem now to be the neglected crop, and each year the prices in the large markets go higher. No crop, in my estimation, is easier to raise; no crop is surer or more profitable if properly cultivated. A little shade is quite beneficial, and high manuring, even with green manures, will not hurt it. Mulching is beneficial, and thorough pruning absolutely necessary in order to reach the best results. Red and White Dutch are the most reliable varieties to plant.

Among the black-cap raspberries the Gregg has gone to the head, and, for the present, promises to stay there as a late sort. Souhegan bids fair to take the place of the earliest kinds, as it is hardy, productive and of good quality. No variety of red raspberry can compare with Turner for hardiness here. All other reds were killed to the ground by the cold of last winter, and the Turner was hurt somewhat, but enough buds were left to give a half crop of fruit.

Snyder was the only variety of blackberry that made any pretense of producing fruit last year, and that was considerably injured by the cold of the previous winter.

This locality suffered but little from either insects, blight, grape-rot, rust, or other scourges of like nature, and we only hope that we may be as free from them the coming season.

At this writing (Jan. 21st) nearly all small fruits are in apparently good condition. The strawberries have been well covered with snow since the cold weather set in, and the canes and vines of other fruit do not seem to have been injured by the late cold weather. The buds, having remained thoroughly dormant since the fall of the leaves and with little moisture to swell them, I believe to be safe if nothing further befalls them between this time and spring. Cherry buds, notwithstanding the extreme cold of late — 30° — are as yet unharmed.

Hoping you may have a profitable and interesting meeting, I submit the foregoing.

DISCUSSION.

Dr. Williams — I have been cultivating the Brandywine. Find it not quite as good a berry as others, but it does nicely and bears well.

Mr. Hallett — I read the reports over very carefully and planted the Seneca on recommendation of Mr. Galusha, but it is entirely worthless. The Doolittle I planted for an early berry, but is later than the Mammoth Cluster, which is the earliest berry I have.

Mr. Kellogg — I think Mr. Hallett must have made some mistake in the varieties of his raspberries, for the Doolittle is certainly an earlier berry than the Mammoth Cluster. I think the Turner is the best for family use. Brandywine is the most firm and best for shipping. The Cuthbert is the latest, handsomest and best for general use.

Mr. Cotta — The Cuthbert is the best berry I have tried so far. It is very large and beautiful, but a bad sucker.

Mr. Bryant — If one will use a hoe in the forepart of the season it will obviate all trouble with suckers.

Mr. Thomas asked if the Snyder was hardy; said it was not hardy with him where well protected.

Mr. Hallett — It is not protected with me and I find it hardy.

Dr. Williams — The Snyder is the hardiest blackberry we have.

Mr. Cotta — My Snyders are used up when the thermometer goes 30° below zero.

Query Box — Question — Can blackberries be injured by pruning as late as August?

Answer — Dr. Williams — Too severe pruning might be injurious.

Question — Will it injure blackberries and raspberries for next season's fruiting to prune in January?

Answer — It cuts away your fruit.

Question — Is the blackberry and raspberry rust the same, and how may its presence be detected, and how may it be destroyed or prevented?

Answer — Mr. Kellogg — I think they are the same. Watch its first appearance and cut and burn.

A remedy for rust. Dust with sulphur. Good remedy if applied before rust puts in an appearance.

Question — How many applications of hellebore or other insect poisons are necessary to kill currant and gooseberry worms?

Answer — As often as you find live worms.

Question — Having set apart an acre of ground for gooseberries, how far apart should they be planted, and what proportion of each?

Mr. Thompson — Think Downing gooseberry a good one. It is an abundant bearer, hardy and don't mildew.

Question — How far apart should currants be set?

Answer — Mr. Kellogg — Three to four feet; Mr. Ricker — four to six feet.

Question — Will cultivation prevent gooseberries from mildewing?

Answer — It will to some extent.

Mr. Ricker — I think pruning a better remedy.

Question — Can hellebore be applied to the currant worm with any effect on the worm and safety to the fruit?

Answer — Yes.

Committee on Programme reported for order of business this afternoon as follows:

1st. Utilizing fruits, G. H. Clayson, of Nunda, Ill.

Discussion.

2d. General Horticulture.

Discussion.

3d. Election of officers.

4th. Miscellaneous business.

5th. Query box.

Society adjourned, on motion, till 2 o'clock P. M.

SECOND DAY — AFTERNOON.

Afternoon session opened with President Slade in the chair.

Prayer by Dr. Humphery.

ARBORICULTURE.*

BY DR. HUMPHREY, GALESBURG.

Arboriculture truly means the culture of trees and shrubs for ornamental purposes, but it has a higher and more important signification. It means tree culture, timber growing, the planting of great forest areas, the production of wood for chemical, mechanical and economic purposes. It is one of the most important industries of the present time, and the question, how shall this industry be best promoted? is *the question* for us to answer.

* Parts of this paper are extracts from a paper that I wrote for the American Forestry Congress, which met at Montreal, Canada, in 1882.

Upon the judicious cultivation of our art depends successful agriculture and horticulture. It is true that a deep rich soil is one of the first essential conditions for the successful production of all kinds of vegetable forms, but there are other conditions quite as important: a sufficient and timely rain-fall, general distribution and retention of moisture in the soil, the best protection from devastating storms, and from injury by early and late frosts.

These conditions cannot be well and thoroughly secured without a considerable proportion of forest growth distributed through cultivated districts.

Large forests on mountainous districts, or along streams of water, may favorably affect the plain below, even hundreds of miles distant, by gradually letting off its moisture during summer from the accumulated snow of winter, yet small groves at a few miles distant of each other would add to the productiveness and to the wealth of even such a favored district. It is not simply the extent of the forest area of a nation that would render it rich in wood products, or secure its best agricultural resources, but a thorough and general distribution of forest growth in all parts of the country. Some parts of the United States have had too extensive tracts of timber, and required to be partially cut away, as well for agricultural resources as for the uses of the wood, while other parts are vast naked plains, and urgently need forest clothing to secure its best agricultural and horticultural interests, and the production of wood.

When our fathers first settled the eastern portion of the United States they found vast areas of timber, some of which had to to be cleared away ere any considerable agricultural or horticultural interests could be secured. The woodman's axe was the first sound of the civilization we have so rapidly attained.

At first the timber could not be used, as the colonies were weak and their necessities few. The demand of our times for forest products for mechanical and chemical uses did not exist, so they must be destroyed. Neither the beauty nor the antiquity of those grand forests could prevent their destruction to make the opening for the pioneer's home. But as soon as a sufficient home-interest was secured to sustain an active and industrious people, the forests began to be utilized in the construction of large cities, thriving towns and villages, scattered all along the Atlantic coast, and reaching out into the Middle and even to the Western States. We well remember the clearing processes practised by the early settlers. Trees were thickly felled together in rows, allowed to dry one season and were then burned. Log rolling and huge log bonfires followed, to finish clearing the ground. The deadening process was also resorted to, the dense shade being removed, the deadening soon became valuable pasture lands, and being constantly drawn upon for fuel, rails, post, shingles and lumber, in a few years it was ready for the plow.

Our fathers little dreamed that the time would ever come when those districts, once the pride of American forests, would become barren districts unproductive of wood or of value for farming purposes. The destructive process has been carried on so long and so extensively that such is the case in many of the Eastern and some of the Middle and Southeastern States, and soon will be along our northern border. Had there been a timely check on the destruction of our forests by individuals holding it as woodland, or if possible by National and State Government purchase, so as to have preserved large areas of our best early forests, the remainder being devoted to farming interests, districts now deserted and barren would be thickly settled, and the inhabitants enjoying all necessary resources of wealth.

From the nature of our government we cannot expect very great aid from Congress nor from State Legislatures; so the great work must be mainly accomplished by the agriculturalist. If this subject could be thoroughly discussed among the people, and presented to the consideration of every farmer in the nation, their general intelligence is such that they would readily see its pressing importance, and immediately begin to devote a portion of their land to forest culture. The individual of to-day might not reap immediate good results, but he would know that he was laying a broad and sure foundation for the happiness, prosperity and wealth of his children.

There is another question which demands the farmer's attention, the importance of which he cannot fail to see, and that is the present urgent demand for forest products. If fifty thousand acres of the best Wisconsin timber are cut annually to supply the Kansas and Nebraska market alone, and if a hundred and fifty thousand acres are cut in the United States annually to supply the demand for railway sleepers alone, and thousands of acres more to supply other wood industries, we shall soon suffer a wood famine, unless millions of acres are soon planted to forests, if indeed we do not at the same time suffer the calamity of an agricultural famine.

This subject, so closely allied to all the material interests of the country, should demand the immediate attention of both the State and National Governments. Many of the eastern nations have, through legislative enactments, given especial attention to forest culture, and there are also important international efforts to secure the necessary forest clothing of the earth.

The Congress of the United States should immediately establish a forest commission to co-operate with a similar commission from every State in the Union. The work of such commission should be to inquire into all subjects connected with forestry; as the relation of agriculture to forestry, the effect of forest on climate in the production of annual rainfall, and the general distribution of moisture; the national demand for forest products to supply the wood industries of the country, and how best secure general tree planting all through the country.

If our government would begin this work at once, and every agriculturalist and horticulturalist who is already alive to its importance does his duty, ere another centennial America will again be noted for her grand and magnificent forests. And with our present resources we shall be in possession of all the elements necessary to national wealth and prosperity, and all the conditions for rendering our teeming millions an industrious and happy people.

THE EFFECTS OF FROST ON THE TRUNKS OF APPLE TREES.

BY T. J. BURRILL, OF CHAMPAIGN.

Throughout the Northwest much damage has recently, especially during the last three years, been done to the apple orchards by injuries to the trees near the ground, but sometimes higher up the trunk and branches. Rabbits, mice, and insects, each and all have been the agents in a part of this destruction, yet sometimes they appear to be blamed more than their deserts, for though the work of each can be easily identified, observers have not always been careful, and have classed all kinds of injury together. We propose in this paper to speak only of the effects of unfavorable climatic causes, save a few words upon a still differently produced disease or injury, popularly known as "sun scald." This last most often, but not always, occurs on the south side of the tree, and is usually, but not always, confined to well circumscribed areas. The bark dies, but adheres firmly to the wood. Sometimes new bark forms beneath the old and the repair is thus accomplished. The name sun scald is a misnomer. The heat of the sun never really scalds any tree, and especially in winter no such action should be attributed to the enfeebled rays. The fact is, the chief part of this peculiar injury is accomplished during the summer, and is due to blight bacteria, the same kind that destroys the pear tree. The south side is more often affected because the outer, corky layer of bark is there more deeply cracked, and the living tissue exposed to the inroads of these fermenting agents. The same thing has been artificially produced on the north side, and can readily be started in any part of the bark of the trunk by inoculation. I have elsewhere discussed this matter, and refer to the published transactions of the Illinois and Indiana State Horticultural Societies. There is abundant evidence of the correctness of this statement of the cause of the trouble now described. Possibly the bark in a given area may sometimes die and adhere from other causes, but in very numerous observations by myself, not one such spot has been seen which could not be confidently pronounced due to bacteria.

The special injuries which are here attributed to frost are of two kinds. In one the bark and the wood, or the former alone, is split so as to gape open until thawing occurs, when the crack may be closed by the elasticity of the tissues, though healing does not take place except perhaps by the overspreading of new growth. This re-

sult is in every way analogous to the bursting of an iron pipe filled with water and the latter permitted to freeze. The iron contracts or shrinks with the increasing cold, while the water in passing from the liquid to the solid crystalline condition, expands, and does so with enormous force. Unless the enclosing material is elastic enough to give way to this pressure without rupture, the latter is sure to occur no matter what the strength may be. In the apple tree the same shrinking of the plant tissues takes place as the heat decreases, and if the inner parts are full of water the same kind of expansion of the latter in crystallizing occurs, and the crack is inevitable. The conditions are: 1st. Sufficiency of water; and 2d. Low enough temperature. In regard to the first, it is not sufficient that the wood is simply "sappy," or moist. It needs be completely filled with water, its cell cavities and other openings gorged, so that as congealation takes place the space is entirely occupied, with no room for expansion within. It is, however, possible that the shrinking of the tissue material may often be the cause of the rupture, just as we see a green stick split when shrinking by drying. This contraction by cold comes about in two ways: 1st. According to the natural law of all bodies, and familiarly illustrated by the mercury in our thermometers. 2d. By the withdrawal of water in the process of freezing. We all know that plant tissues shrink and swell with the varying amount of water, and all probably know that a wet rag may "freeze dry." In these two ways the shrinking of the outer parts of a tree may be sufficient to cause a crack without the internal pressure of freezing water; but it is much more probable that both work together when serious mischief of this kind occurs.

In regard to the degree of temperature, or the intensity of cold required, nothing definite can be stated, save that for all our native trees, and all others hardy enough to usually withstand our winters, the thermometer must sink far below 32°, the freezing point for pure water. The reason for this is not hard to find. The fact is, in all such living trees the water normally in their tissues does not freeze at zero of Fahrenheit's scale. Of this repeated examinations this winter have given abundant testimony. When the thermometer stood at —6°, I found, after careful looking, no ice in the mature wood or bark of many trees examined. No crystals were to be seen with the microscope, and though the fibers were more brittle than in warm weather, they were still flexible. At twelve below the pith in several kinds, including Bartlett pear, peaches, and in the softer shoots of apple, was completely hardened like a stem of ice, while the wood and bark, in all except some apple tree "water shoots," still remained flexible. At twenty-eight below the wood of many kinds of trees was rigid and full of minute crystals, though in no case was this found true with well-matured bark. This exemption of the water in plant tissues from freezing with cold below 32° Fahr. is of easy explanation, though at first sight a curious phenomenon.

For instance, it would to many seem improbable, if not impossible, that a piece of green wood, brought indoors from a temperature of zero or below, should have in its tissues over forty per cent. of its weight in water, and this not frozen, while at the same time a drop of water put upon its surface congeals instantly; but this is true, and can easily be verified by any one. What we call freezing is the regular arrangement of the ultra-microscopical *solid* particles (molecules) of which liquid water is composed. To become thus arranged in definite order from the preceding condition of no order of association, requires freedom of movement, and anything that impedes or hinders such movement of these solid molecules hinders freezing. When salt or sugar is put into water we say it is dissolved; that is, the invisible solid molecules of the salt or sugar are disassociated from each other and mixed through and through with the solid molecules of the water, just as we might mix peas in sand. Now such a mixture will not freeze at 32° Fahr. A saturated brine may be cooled down to 4° Fahr. before ice forms, and then it is pure water that becomes crystallized, not salt and water, though some of the former may become mechanically entangled among the crystals. Now, if a plant cell contains within its cavity pure liquid water, this will solidify at 32°, but if, instead of pure water, other substances are dissolved in it, a lower temperature only will cause crystallization; and the lower the stronger the solution. But healthy plants, in proper winter condition, have no water in *the liquid state* in them. The cells, not filled with other materials, have only air in their cavities. This is true even when forty per cent. by weight can be artificially evaporated from green wood. The water is mostly in the texture of the *cell walls*, in a state of molecular mixture with the molecules of the plant substance, and the whole is a true solid. Freezing cannot take place until the crystallizing power is strong enough to force these water molecules out from among the others, and the force required depends upon the attractive power between such molecular particles. Grains of wheat holding in this way about one-tenth part of their weight in water (not as a liquid), have resisted —70° Fahr. without injury, and without the contained water freezing.

But by far greater destruction has come to our orchard trees through another form of injury by frost. A longitudinal crack, aside from the exposed wound, does no particular harm to the tree. If afterwards protected from the effects of weather and enemies, even the cells along split surfaces may retain full vitality, and the whole tree grow as well afterwards as before. Not so, very often, in that to be now described. Many thousands of promising apple trees have been killed outright, or so injured as to be worthless, in our part of the country during the last few winters, by the bark separating from the wood a part or the whole of the way around the trunk, usually near the ground. Because the trees do not, perhaps,

show by their foliage signs of injury in the spring, but do so plainly during sometime in the summer, some have attributed the cause to something else than frost. But whatever other factors may enter the problem, we may rest assured that the actual force which sent off this bark is the expansion of water in freezing, together with the concurrent shrinking of the plant tissues by the cold. The latter alone cannot produce the result, however it may be in the case of longitudinal cracks, because such shrinking tends to tighten, not to loosen, the bark. The internal parts never shrink away from the external.

What has heretofore been said about the crystallization of water in plant tissues must be recalled in the present explanation, and one other fact added. No ice is formed in the substance of the cell walls, though nearly half their weight be water. The molecules of water at the surface first become arranged to form the beginning of a crystal; next, other molecules are withdrawn from those of the cellulose and placed under the first and crowd them out. This continues until the crystal stands outward to some length — the successive additions being always at the base and under those preceding — and until the crystallizing force no longer is sufficient to extract the molecules of water from the attractions of those of the other material of the cell wall (cellulose). Such crystals are very slender, but usually stand thick together, presenting to the naked eye something of the appearance of a close coating of hoar frost with a velvety reflection. Under a magnifier the distinct and well-formed crystals of solid ice are plainly discerned. It is this crystalline growth, combined with the shrinking of the tissues in the two ways already pointed out, which ruptures the cambium cells and separates the bark. The cambium is by no means the first part of the stem to freeze; but the cells of this layer have much thinner walls, while their cavities are more nearly full of protoplasmic and other material, all capable of yielding water for crystallization. Sometimes the annual layers several years old are separated in the same way, and from similar causes.

It now remains to notice the conditions under which these disastrous results are produced besides the absolute cold of the winter. Probably we shall never find either form of injury without the thermometer showing at least zero temperature, but the mercury may sink much below this while the trees are in certain favorable conditions without injurious effects, to —20° or —30° or lower.

We all know that growing shoots have by far a greater proportion of water in them than ripe twigs, and that rotting wood will soak up much more water than sound wood. In well-ripened woodbark and seeds there is, as has been said, no water in a liquid state, neither will they readily absorb such water at a low temperature when immersed in it, though in molecular combination with the organic substances, there is, in the dryest seeds possessing the power

of germination, about ten per cent. by weight of water, and in the trunks of trees in good winter condition forty per cent. of water. The intimate intermixture of the particles of water with the others spoken of comes about through the life processes of the plant, and cannot be so blended by mechanical means. A dead and dry piece of wood will quickly absorb water, but the latter does not so completely lose its liquid character, and crystallizes at or near 32° when exposed to cold.

If now we inquire what conditions of the tree render it liable to crack open by frost, we should say, 1st. The engorgement of water by the action of the roots in a comparatively warm soil. By this means the ducts, cell cavities and intercellular spaces, are all filled with liquid water, as we know is the case with maple trees in spring time. In such condition severe freezing can hardly help but result in the splitting of the trunk. 2d, Unsound heartwood which absorbs an undue amount of water from the wet soil; and 3d, Soft unripe outer layers, which by shrinking as described above from two causes, burst. In the case of the separation of the bark, we must look for the most part to the condition of the last year's growth, not very much to the interior tissues. When the summer has been favorable, the cultivation wisely done, the tree in good vigor and the young growth well ripened, very severe cold will be withstood without injury; but with the opposite set of conditions when freezing occurs, rupture results. Something depends upon the peculiarities of the variety, in the case of apple trees; something on the management of cultivators in several ways; but, after considerable observation, it seems to me that a summer drouth followed by a warm and moist autumn, and then by severe freezing, is the combination of causes most damaging. If the growth and other physiological processes are checked in midsummer, the tree may be poorly prepared for the vicissitudes of winter, without further enfeeblement; but when, through the starting of new growth in autumn the last formed cells are left without the possibility of maturing, injury is much more liable to follow. When plants have normally completed their season's growth, such autumn stimulation does not affect them with anything of the likelihood in the former case. The more severe the summer's check, the more readily the growth in autumn starts, and the less ready the tree for winter. The only apparent reason for the injury under consideration occurring near the ground rather than elsewhere, is the fact that in autumn the ground is warmer than the air and thus more and later growth may take place at the base of the trunk.

My attention was specially called by Mr. B. F. Johnson, of Champaign, during the last summer and autumn to the healthfulness of orchards on flat lands, while those upon the higher ridges — the sites usually supposed best — were badly diseased. Several trips were made by us together to study the facts and if possible their explana-

tion: what I have written in the last paragraph is the result. Not on every ridge or knoll will trees suffer more by drouth than upon adjoining flat land; but this is generally the case in Illinois. If so, has not our teaching as to orchard sites been erroneous? No one would, in his senses, advocate putting apple trees into undrained sloughs; but it does appear that land needing and having good tile drains is better adapted for an apple orchard in our State than the dry hills and slopes.

If the foregoing is true, every means within the cultivator's art should be used to gain a good summer's growth without a July or August pinch — such as frequent pulverizing of the surface soil, mulching, the use of clover as a cover to the earth, etc. Trees that are permitted to overbear are more liable to injury for similar reasons to those stated above. Prevention can in part be secured by heaping the earth late in autumn against the trunk, and probably any shelter from the winter's sun will do some good. The more changes from warm to cold and the reverse the greater the amount of water in the tissues. A maple tree yields more sap from a tap on the south side than a similar one on the north; but the per cent. of sugar is greater in that from the north; two equally significant facts for our purpose. The tree is more liable to burst on the south side, because there is in the tissues of that side really more liquid water. When shelter from the sun is offered, bursting may occur on any side, but is less likely to take place.

DISCUSSION.

Dr. Humphrey — I think Professor Burrill makes too strong a statement in the first part of his paper. I think there is a weakening of the tree before the bacteria attack it: think his statement too broad on this point. I think the plant is damaged or diseased before the bacteria commence to work on it — the ailment of the plant making its condition favorable to the attack and growth of the bacteria.

President Slade — I feel that Dr. Humphrey's paper was a very good and interesting one, and he has come a long way to be with us. I am very glad that we have him with us. He is, as you have doubtless observed, a great worker, and I want to thank him for his good and valuable paper.

REPORT ON PRESIDENT'S ADDRESS.

Mr. Minkler, chairman of Committee on President's Address, reported:

We would call your prayerful attention to the subject of forestry therein contained, that subject which not only interests us but our posterity. What can we do that will be effectual in this matter? It is a subject of great moment. There were some resolutions passed at our last meeting, which need that some action be taken at this meeting (we refer to the resolution of Volume XVI, page 285), and we recommend that we appropriate the fifty dollars that is awarded to this Society to that purpose, or as much as is needed for the same.

S. G. Minkler,
Geo. J. Kellogg,
Committee.

DISCUSSION CONTINUED.

Mr. Scofield — When I heard Dr. Humphrey read his essay it occurred to me that it needed not a word to convince all here of the necessity of timber culture, so little now practised or brought to action in the cultivation of our farms and State. The founders of our horticultural societies devoted a part of their discussions to forestry, and it continued to increase until the meeting of the Society at Elgin, and that meeting seemed to teem with forestry. From that meeting it went out through the papers to the whole country. Dr. Humphrey's paper has put the cap on this whole work, and every occupant of our schools, and every farmer of this country, ought to be familiar with this subject of forest-tree culture. One hundred men a year have assembled in these conventions for nearly thirty years, and have put into practice forest-tree culture. Should we to-day, in face of all these facts, leave this subject? Shall we not, as lovers of our country, as horticulturists, place this literature in the hands of every boy, and every girl, and farmer in the land? I ask the question which will be answered by men on this floor. It lies with you, gentlemen, whether we put this matter before the people, or let our volumes lie on musty shelves. I suggest that it be put in the form of a school-book, as being the most effectual way to place it before the people. It will require time, money, and labor to accomplish this end.

Dr. Humphrey referred the Society to the latter part of his paaer in last year's report, and read the part bearing on this subject.

Mr. Bryant — I think that the better plan would be to get out a circular on the subject which could be sent around for a one or two cent stamp. It seems to me that we can get the matter before the people in this way, better than to print some long essay that no one would read.

Mr. Kellogg — I think the more brief they can be made the better, and the farther what money you have will go. There should be a description of how and what to plant, in a concise and plain form, so as to be readily understood by every one.

Mr. Scott — I think it should be very brief to make it do much good, as we have but a limited supply of money to do with, and we can make it go farther.

A motion to accept the report on the President's Address prevailed by a unanimous vote.

HORTICULTURE NEXT TO A DIVINE INSTITUTION.

BY MRS. M'GLINCY.

Mr. President, Ladies and Gentlemen:

What to do for the boys, how suitably to raise the girls, and *how* win and *hold* the heart of the men in the home, has become a question of such prominence as *now* to tax the mind of the wisest and burden the heart of the purest and best men and women of our day. And so we learn from what we call the *book* of all books, that "the Lord God, immediately after creating man planted a garden, and in it, from the ground, made to grow every tree that is pleasing to the sight and good for food, as well as the Tree of Life in the midst, and after supplying it with a river of water, took the man and put him into the Garden of Eden to dress it and to keep it." And then, saying, "it is not good that the man shall be alone, I will make him a helpmate for him." And after forming every beast of the field, and every fowl of the air, and then taking them to Adam to be named, he made a woman and took her to the man, and Adam recognized her as his wife. And though there has been much speculation as to the size and location of this garden, your essayist believes it embraced much of the known land of that day.

So, from all this, we infer it to be among the first purposes of the Divine mind that there shall be a family home, with the living, breathing creatures of God all about it.

And as in this garden grew every tree that was pleasant to the sight and good for food, and the man put there to dress and to keep it, and woman given as a companion so they might enjoy it, we can but infer that horticulture was to be the occupation and delight of that first of God's families. And from all we see of the beautiful creatures of the larger Eden that God has made for us, it must be that, if order is the first law of Heaven, beauty is well-pleasing there. And as love for the beautiful seems implanted in all human hearts, tho' taking fantastic forms in some, we see the need of cultivation, as illustrated by the difference between the trinket which satisfies the imbecile, the gew-gaws of the heathen, the feathers and war-paint of the savage, and the artistic outgrowths of the classic renaissance, down to the beautiful creations of the present belles-lettres and æsthetics.

And if it be true that he is a public benefactor who makes two blades of grass to grow where otherwise but one would spring, what does he who makes a thing of beauty to be a joy forever and part of the will of God himself?

So through all the ages, from the Lord's garden in Eden down to our day, where, notwithstanding we have the sunflower, we have so much more of the æsthetic tendencies to the delightful fascinations of garden culture and home decorations. From all this and more, see how the Divine plan has been fostered by the hanging gardens of Queen Semiramis of Babylon, the gardens of Solomon with aviaries, wells and streams of water, with the extensive gardens of Cyrus and other Persian monarchs, laid out in romantic situations, distinguished for diversity of uses and products, and in the Vale of Tempe and other public gardens, extremely elegant, ornamented with temples, tombs, altars, statues, monuments and towers.

"I know the fir trees in their sombre green,
My giant friends that murmuring along
The ceaseless by-ways of the deep ravine,
Once lulled me with their song."

* * * * *

Grand is the forest in its charm,
And proud too is my heart.

The Greeks copied from the Persians, the Romans from the Greeks, and about the time of Cicero and Varro they took up the cultivation of odoriferous trees and plants, and made their arrangements according to assimilation of odor as much a study as we do of the harmonious blending of colors.

"The perfumes of flowers that are hovering nigh,
What are they, on what kind of wings do they fly?"

The early French and Dutch styles were evidently adopted from the description of Pliny's garden. On this subject Loudon remarks.

"The terraces adjoining the house, the lawns descending from thence, the little flower-garden with the fountain in the center, the walks bordered with box, and the trees sheared into whimsical artificial form, together with the fountains, alcoves, and surrounding summer houses, form a resemblance too striking to bear dispute."

The use of glass in the construction of conservatories was early known to the Greeks and Romans, and the gardens of Adonis were probably of this kind. It is said that in them were to be seen rare trees from India and China — the myrtle and crocus in flower, and the cinnamon and frankincense trees covered with leaves, and cucumbers grew there all the year round. And during all the doubtful destinies of the dubious ages of darkness horticulture lived.

But what else could she do, with all earth and the orbs of heaven conspiring to help her? So, chaining the laws of nature and the supernatural to her wheels, she pressed forward, foreshadowing the destiny in her precious embryos.

And as the world became physically more perfect and beautiful, in the same ratio it became morally better. And to increase the proportion is the work of the horticulturist.

Science has its army of workers, whose brain-power is a mighty element in the world's progress, and agriculture drives the wheels of commerce and navigation; but what shall we say of the whole power of horticulture in its full bearing upon civilization?

Washington said "Agriculture is the most healthful, most useful and noble employment of man," and to this we would add, horticulture is the most delightful, elevating and inspiring employment of man.

And Garfield, said "As the government lights our coasts for the protection of mariners and the benefit of commerce, so it should give to the tiller of the soil the lights of practical science and experience." And to this we would add the government should give to the mother in the home PROTECTION from the most gigantic CRIME of all crimes — the liquor traffic."

> "Great, wide, beautiful, wonderful world,
> With the wonderful waters round you curled,
> And the wonderful grass upon your breast,
> World, you are beautifully dressed.
> You, friendly Earth, how far do you go
> With the wheat fields that nod, and the rivers that flow,
> With cities and gardens and cliffs and isles,
> And people upon you for thousands of miles."

In Italy, after the dark ages, and with the Reformation, as the art of gardening revived, it was patronized by the family of the Medici, and their gardens, which were of the geometric and architectural styles, long served as models for the most of Europe, and it continued to be imitated in France, Germany and Britain until the introduction of the English or natural style.

During the reign of Louis XIV of France, Le Notre laid out the famous gardens of Versailles, and M. Fagon erected the first hothouses of France in the Jardine des Plantes. And from about 1760 landscape gardening, and the adoption of the English style, rapidly spread into France, Germany and Russia, where it still prevails.

As we have shown, horticulture is of very ancient date, and with the exception of certain modern improvements, such as glass houses, etc., was in a high state of perfection two thousand years ago. And as most of the elements of a modern architectural garden are alluded to in connection with those of Babylon, see how we have followed the early indications.

The terraces no doubt were decorated with vases, parapets, etc., and they are described as being furnished with groves, containing fountains, seats, parterres and banqueting rooms, and as combining the minute beauties of flowers and foliage with masses of light and shade and extensive prospect. And the groves of Orontes must be regarded as a park or large garden in the picturesque style. And as with them the chief requisites were shade, coolness, fresh breezes, fragrance and repose, for us we would use (as we have more of vegetable and fruit gardening) culture and inspiration, and then ask how we differ?

Ah, that's the question, and here lies the meat of the nut. Just as in the spiritual plan of God we had Him in the beginning — then the creation — the Mosaic dispensation, and now the Christian dispensation with Christ, which is quickening, helpful, elevating, inspiring, with God in all, through all, above and over all.

So from our horticulture, with all its helping, stirring, ennobling, filling, thrilling and esthetic tendencies, we must save our boys, train our girls and win and hold the men in these sweet homes that have come to us a precious afterthought under its sweet benedictions. And as to the way to do this, we would say first of all, charm, and by this charm hold the men and boys in the home, and commit to the girls the keeping of all the bric-a-brac, the nick-nacks and the training of the tender vines and plants — give them and all the family knowledge of all the household treasures — give all a share in them, and then with care for them and conversation upon and about them, look for evidences of growing love for, and such interest in, them as can be trained into a real home conservative.

Next to the love for those in the home comes the home itself, if there be anything lovely there.

One can scarcely imagine a man so degraded as not to take hearty pride in a pure home, made fascinating and elevating by the decorations and evidences of art and culture in wife and daughters. In such a home expect like father, like son, and you will most likely find a very chip of the old block.

"And art thou come with the heart of thy childhood back,
The free, the pure, the kind?
So murmured the trees in my homeward track,
As they played to the mountain wind.

"I have turned from my first pure love aside,
O, bright rejoicing streams!
Light after light in my soul hath died.
The early glorious dreams!

"But I bear from my childhood a gift of tears
To soften and atone;
And O, ye scenes of those blessed years!
They shall make me again your own!"

And under the varied and almost innumerable temptations of the day for everybody, we would urge all heart-keepers to bear in mind the Darwinian teaching of "the survival of the fittest," that however this may be in the physical world it is true in the moral; and that in order to win and hold the dear ones in the home, they must get line upon line of that which is morally elevating; and the precept upon precept must convince them of something better than they have, and urge them to live for it.

"Far does the man all other men excel,
Who, from his wisdom, thinks in all things well,
Wisely considering, to himself a friend,
All for the present best and for the end.
Nor is the man without his share of praise
Who well the dictates of the wise obeys;
But he that is not wise himself, nor can
Hearken to wisdom is a useless man!"

Mr. Minkler — I want to move a vote of thanks to the lady for the excellent paper.

A recess of ten minutes for social intercourse was taken.

After recess the President announced that we would proceed to the election of officers, which was conducted with entire harmony. Each was elected by a unanimous vote by a single ballot cast for the Society by the Secretary. The following are the names of the officers elected for the ensuing year:

President — S. M. Slade, Elgin.
First Vice-President — Arthur Bryant, Jr., Princeton.
Second Vice-President — J. V. Cotta, Lanark.
Third Vice-President — D. Hill, Dundee.
Corresponding Secretary — D. W. Scott, Galena.
Recording Secretary — E. W. Graves, Sandwich.
Assistant Recording Secretary — J. S. Rogers, Marengo.
Treasurer — L. Woodard, Marengo.

Dr. Small extended a cordial invitation to the Society to meet in Kankakee.

D. Hill invited the Society to Dundee.

An invitation was extended to meet in the city of Elgin.

The three places were voted for and the result was a large majority in favor of Elgin, whereupon the President announced that the Society had made a choice of Elgin as the place of holding the next annual meeting.

The time of holding the next meeting was referred, by vote, to the Executive Committee.

Committee on Programme reported for the evening's business as follows:

1st. Two Fields, by Mrs. L. K. K. Becker, of Elgin.

2d. The World a Garden and Humanity a Gardener, by Mrs. J. R. Curtis, of Marengo.

3d. Miscellaneous Business.

4th. Query Box.

Society adjourned until 7 o'clock in the evening.

SECOND DAY — Evening.

Meeting convened as per adjournment, and the President announced a paper by Mr. O'Neal, of Elgin:

FLORICULTURE.

BY B. O'NEAL, ELGIN.

Mr. President and Gentlemen of the Horticultural Society of Northern Illinois:

The history of floriculture in all its purity, simplicity and grandeur, is so vast and extensive that it could never be written. Under "Flora's mantle" are many undiscovered treasures. It contains not only a balm to please our finer sentiments, but a therapeutic power to restore the diseased functions of a physical organization to its normal condition, and in our public schools I hope some of the fancy branches now taught will give way some day to the study of medical botany.

To develop and assist the natural forces in raising plants, flowers and fruits to the highest possible condition, is the true mission of horticulture and floriculture. I am sorry to say Americans do not take a front rank in this field. We produce a great many new varieties in the various divisions, but the varieties that we produce are mostly sports. A sport is a natural phenomena, a kind of "Siamese twins," so to speak, unable to reproduce its kind, and if it can, it is as varying and inconstant in its habits as the untutored red man of the frontier, so that a dealer who throws a sport upon the market with a great flourish of trumpets is a horticultural wasp. The only true way of obtaining new varieties is by fecundation and hybridizing.

I am glad, so far as my observation extends, that the flourishing days of the itinerant tree-peddler is on the wane. The people do n't take so kindly to his flaring chromos, pickled fruits and magic lantern displays as formerly. Florists', nurserymens' and horticultural journals have been multiplying quite fast in the last few years; all three seem to be doing an extensive business in premiums. Now it is about time this "free lunch" business should stop — beer is beer and soup is soup. We ought to remember that this country is wide and big and broad enough so that all can make an honest, honorable living.

All our friends interested in massive bedding would be well repaid by visiting the Chicago parks in the summer time. The conceptive taste and originality displayed by Mr. Kenst in the South Park bedding outrivals the famous Battersea Park, London.

I will try and give you a part of an every-day conversation between myself and my customers — of course my customers are principally ladies, and, bless the dear ladies, I always try to please them. The ladies come mostly in pairs; some are shy, some are sharp, and think my time is not worth a cent a day, some will pick flowers if I do n't keep my eye on them. I would sooner they would steal a quarter's worth of soap from my wife than steal a carnation from me; but the majority of my customers are honest, noble-minded souls. They generally say: "Oh, dear! if we could only grow plants as they do in greenhouses." I tell those ladies this would not be reasonable, because a florist is generally a man that understands the wants and cares of plants, and builds his houses not to live in, but to grow plants.

I have given the growing of plants for house decoration some study, and I find that failure arises from two causes: some ladies fuss too much, others totally neglect them. It is surprising what an amount of ignorance and indifference intelligent people display in caring for plants and trees. Some ladies say: "My calla never had a bloom only the one it had when I bought it at the greenhouse," and after asking several questions and receiving answers thereto, I am not at all surprised at such a result. A good compost

for a calla, or any kind of plant in fact, is one-half well-rotted fine manure, the remainder leaf mould and friable loam, with enough sand added to make the whole porous. Callas, after a season's growth, should be allowed to rest in summer. The practice of allowing the bulb to dry up like a dahlia is not good.

When the bulb shows signs of new growth toward fall, repot in a pot about two sizes smaller, and during the growing season it should have two shifts more into a size larger pot each time, so at the end of each season you will always finish with the same size pot. Don't water with hot water, neither allow water to remain always in the saucer — it makes the foliage soft and the leaves will snap. Water occasionally with soap-suds — this adds to the growth and keeps earth worms from the soil. In watering, look over your plants every day, some will want water, some will not. A tea made of tobacco stems will kill green flies by syringing, etc. The leaves of plants are porous, and like frequent baths as much as you do. The latter is the best preventive for red spider.

Don't grow too many kinds, and never have a crowded plant-stand. Don't take every lady's advice about plants: if you are tolerably successful be satisfied with that. A light sprinkling with white hellebore when the leaves are just formed, and another sprinking about two weeks later — if you do this you won't be troubled with rose slugs.

A good compost for cactus is half leaf-mould, half sand and broken brick and old mortar from the size of a pea to a hazel nut; this will do also for wax plants, and treated similar to cactus, except in the growing period they must have plenty water.

Last winter I spoke of my Exeter Steam Heater; this year I wish to endorse every word of what I said, and to add that I can adjust my heater to run nine hours instead of six when the thermometer is 8° below zero. Steam heat is the heat of the future. For house heating it is superior to furnace heating — no gas, and the liability to fires is less. For heating greenhouses I think it superior to hot water, because you can put heat on and take it off in one-sixth quicker time than by hot water. In the early spring months, when the sun shines bright and the air is keen and cold, the hot-water heat and the sun heat makes the house too hot, and on account of the very cold air ventilating is out of the question. The steam heat can be shut off in five minutes; the hot-water heat cannot be lessened inside of two hours.

I think I must have exhausted your patience, for, according to the nature of things you cannot be a very enthusiastic audience, and I confess that I myself feel somewhat like poor Peggotty in "David Copperfield," "a lone, lorn creetir."

DISCUSSION.

Mr. Kellogg — The paper just read by Mr. O'Neal is a very practical one, and I think will do a world of good among the house plants and the ladies. The best way to bring out such facts is by asking questions.

Moved that a vote of thanks be tendered Mr. O'Neal for his interesting paper. Carried by a unanimous vote.

S. G. Minkler — We are glad to have such papers in our Transactions; it will be of interest to the ladies. When I see flowers in a house it shows to me that there is peace and happiness in that home. They make home cheerful and attractive, and we can keep our boys at home. I should be glad to have all these picket fences removed, and in their stead evergreen fences and flowers to beautify your homes. It will make your streets look wider, and beautify your city. We shall be glad to continue to meet and work here in your place if we can prevail upon you to do this; and above all, I should like to see the picket fences removed from the cemeteries and evergreen fences take their place.

NATURE AND ART.

BY MRS. L. K. K. BECKER, ELGIN.

"Nature the Mother and Mistress of her Field."

How many-sided Nature is! How great — how simple. She smiles, she laughs, as on a warm spring morning, with sunny skies and babbling brooks, and bursting seeds and swelling buds, her presence is felt everywhere. She weeps in the long dismal northeast rain storms that beat with cold and pitiless severity on her young things just out of their covers; and she knows how to look solemn for days together, as when, with sombre leaden skies, she will give but cool and austere greeting to any comer, and very likely turn him home again in a blunt way she sometimes exhibits when adverse winds are blowing.

But what a mother she is, with all the traditional traits of the ideal mother — sympathy, tenderness, fortitude — and at the same time she embodies the peculiar characteristics of the thrifty. Her work is done at home under her supervision, and with the most untiring industry. While her kitchen fires are burning every moment is utilized; her workrooms are full of busy workers; her laboratory overflowing with expert workmen filling her countless orders.

Would you know her secrets? You will not learn them by conning the open book of nature, of which we have been told so much, and which it is to be hoped some of us have by heart. She knows how to keep her own counsel, and will not tell her methods to the world. In all ages men have admired nature — she has inspired their noblest thoughts, and poets and painters have proclaimed her grandeur and her beauty, from King David down to the present. Man has also persistently sought her strong box, and she has revealed places where she sometimes leaves it, but it is pretty well decided that she has, like every good capitalist, various places of deposit, not patronizing one bank alone. In this search a few secrets have been unearthed, and some persons have profited by them. A few others have tried experiments, a great many have guessed at methods, while a very small number have deliberately set about observing nature's modes of operation minutely, comparing notes; and following, as near as may be, her implied instructions. These are the hope of the world.

Nature's field of labor is extensive In it may be found every variety of soil, poor and rich, and although mistress of it, she holds it in trust for the children of men, and makes it yield as well as she can. The field is rich in materials, but the demands of her children render it difficult at times to satisfy them. And again, there are often unfavorable conditions that make success doubtful, and oft impossible, but she is an indulgent mother and does the very best she can. Some of those for whom she labors are a worthless lot, but a few of them, now arriving at years of discretion, seek to help her a little. From very early times nature has had a handmaid:— rude, unlettered, ignorant at first, she has in all these long years learned much, and now promises to prove herself invaluable, not only to nature, but to man. He has at last awakened to the necessity of coöperative, intelligent action in this field, where nature, the mother and ruler, has been supreme. He begins to appreciate how often man has been of ruinous injury by his ignorant demands, and what needless sacrifices he has caused :— for example, by denuding a portion of the land of its majestic forests he has dried up the native streams; by wholesale destruction of the birds he has destroyed the fruit. For long ages he has cried to nature, "give, give," making no adequate return to the field, content, if possible, to reap without sowing, with no fear of retribution. *Now* he is learning that

> "Earth gets Earth's price
> For what Earth gives us ;
> 'T is only heaven is given away."

and that "as he sows so also shall he reap." Indeed, it is time that the warning messages, delivered in diminished harvests and increased wants, should be heeded. Otherwise bankruptcy lies not far behind.

Now it is that man begins to dwell upon nature's methods, to remember dropped hints of rotation in crop, and of saving the candle ends, recalls the fact that she accepts old clothes to make over, taking cast-off boots and shoes and reducing them to absorbents, hoarding and saving every scrap and crumb against some future time of need, when it may be necessary to scatter like a spendthrift. He even reflects that his own body will not be refused when he has done with it, but covered from obtrusive gaze with one of nature's mantles of grey, ermine, or green, the low tent where he has been laid decked with starry blossoms, in due time she will incorporate that body into new and beautiful forms. Nothing but is of value. He has seen her use the silken gossamer web of the spider, not to catch flies, but to string her diamond beads upon for a sunrise reception, and upon his window-pane he has often found her frost-lace curtain stretched for show, and repeatedly has he had occasion to notice that she has tried, with entire satisfaction, the efficacy of her bleaching agencies upon his garments and upon his carpets. These are but trifles, but they have left their impression to the effect that nothing is without practical value, and that economy is wealth. Thus it is, that in nature's field, as under the poet's observation, "Knowledge comes, but wisdom lingers," as is significantly further shown when the well and fountain become dry, the water of the river fails to a mere thread, great cracks and fissures open in the ground, the corn is parched up, the grain shrivelled, the fruit blasted. "Wisdom lingers" then. But Art is in the field, and she suggests —experiment. Man tries it and fails: "Wisdom still lingers," but Art is not discouraged. She shows vitality, suggests more and better trials, and little by little achieves a small advance. This suggests the poet's observation again: "Art is long, and Time is fleeting."

Great truths and principles are sometimes obtained after long search and experiment and observation — at other times revealed by a flash like lightning. Whether our improved fruits and garden vegetables were brought about by the last or first methods I do not know, but we are indebted to art for the luscious peach instead of nature's bitter almond, and also to the crowning excellence of northern fruit — the apple, as we now know it, instead of nature's sour crab.

It is art, too, that has hinted that nature's stock of silicate in certain localities is low, and she ought not to be expected to produce anything without it; that a present of phosphate would please her; that ammonia would be extremely useful in some parts of the field, and that in another part of the same there is actual trouble for the want of proper drainage.

Where these hints and suggestions have been acted upon, a marked improvement has been noticed at harvest time, when nature pays all her debts, and gives liberally as she has been blessed. Thus art is ever busy in her field, which lies within that of nature, though

less extended. Nature might get on without art; but art without nature — never. Nature can make a blade of grass; art can only help it to grow larger, longer, better, and once more we may refer to the wisdom of the poet, and as we look over the two fields, accord with him, that "All art is nature better understood."

Man is dependent for sustenance and comfort upon both fields. All life and development is founded upon nature; improved conditions upon art. These fields are open to whomsoever will, go in and occupy them; but to be successful in them man must be master of his art. To leave the figurative and turn to the real: it is the province of horticulture to seek and accomplish greater excellence in natural productions, increase values, insure some greater degree of beauty, encourage a growing interest in their subjects, by inquiry, study, and experiment. This, and more. The horticulturist ought to be, and generally is, I believe, a true lover of nature. His heart responds to her voices; there is a refinement in him that is capable of the best cultivation. Perhaps I have been exceptionally fortunate, but I honestly think that those with whom I have had dealings have always given me too generous measure for my money. It has led me to think the *profession* makes people generous. I do not see how it could be otherwise, for what are flowers, or fine lawns, or noble trees, or delightful homes, without neighbors and friends to enjoy them — and not only our immediate kindred, but the people of our town.

What pride and pleasure we take in the well-kept grounds of one of our own citizens; how lingeringly we gaze upon his bordered walks and well-kept garden. We feel we have a share in it, and we point it out to the stranger with us, although we have nothing of our own to show him. The Creator remembered the *poor* lover of beauty when he endowed him with appreciation, that sense by which all that is *fairest* becomes his when he looks upon it. If your garden wall be not too high your roses will be mine when I pass, for I shall behold their beauties and inhale their fragrance. Scripture tells us "No man liveth to himself alone," and this is certainly true of him who labors in the field of nature or of art.

It is told of the Benedictine monks of the sixth century that they proved themselves a blessing to mankind, for they converted the heaths and forests about them into flourishing farms, and were the best husbandmen in Europe. When we look back through the history of the ages we find that our Saxon ancestors, up to the sixteenth century were little but herdsmen, keepers of cattle and sheep, gluttonous flesh eaters. His black bread was his dessert. The fruits that we enjoy were unknown. The healthful pleasures derived from our extended bill of fare must greatly change the natures of a people.

It is for the horticulturist to bring from the fields of nature and art such fare and such ideas as will conduce to the highest development of man and his children after him, to the end that they may dwell in security, and reach a higher plane than the world has ever seen.

The field of nature is the world, and the field of art will ever lie within it. In nature's field there is nothing that is not wonderful. The age of miracles is not past, for every year is one miracle from seedtime to harvest.

Mr. Minkler — The paper just read is certainly a good and instructive one. One good idea is advanced, that everything good must come from Mother Earth, and the illusion there is very appropriate. Am glad that this paper can go on our records.

Dr. Humphrey — I am glad of this paper. It has very much of interest in the philosophic thought and research, and I regard it as excellent.

The President then introduced Mrs. Ira R. Curtis, of Marengo, who gave a very eloquent address of nearly an hour's duration on the interesting subject of "The World a Garden, and Humanity the Gardener."

REMARKS.

Mr. Kellogg — There are thoughts that come to us when we need more eloquence than we possess to express them. Such papers and the address as we have listened to this evening are the poetry of our Society, and it is a grand thing to have them go in our volumes, and we certainly are very much indebted to these ladies for their excellent papers and talk, and I move a vote of thanks to them, and a request that Mrs. Curtis prepare her address for publication.

The motion was carried by a unanimous vote.

Mrs. Curtis said that her speech had been entirely extemporaneous and it would be impossible for her to reproduce it for publication, and she would be obliged to decline.

The Society adjourned until to-morrow morning at 9 o'clock.

THIRD DAY — MORNING.

At half past nine, Thursday morning, the meeting was called to order by the President, and upon his request Mr. Minkler opened the meeting with prayer.

The President announced as Committee on Final Resolutions, Messrs. Bryant and Scott; Committee on Forestry, Bryant, Scofield and Edwards.

LANDSCAPE ARCHITECTURE AS APPLIED TO CEMETERIES.

BY J. P. BRYANT, OF PRINCETON.

As cemeteries are objects of interest to all classes of people, and in small towns especially, they need the practical interest of some persons competent to manage them properly. I have thought it not improper to say a few words in regard to them under the head of Landscape Architecture. As they need the skill of some one who has studied tree planting to lay them out properly, what class of men should be more interested, or what class is it more fit to address on the subject, than horticulturists? I am sure that many of them will find an opportunity to take a lead in the work of providing burial places — burial places that will attract and charm by their beauty, and not repel by their ugliness and deformity. With this much by way of introduction, I will proceed to give a few hints that I am sure will prove of value, if they do no more than call attention to this important subject, and induce some one to take a practical, working interest in the matter.

Rural cemeteries as a rule, have been neglected patches of ground devoted to the burial of the dead, and, seemingly, also to the growth of brambles and weeds. Driven by the cares of a busy life we soon forget our friends whose remains are laid away in the ground forever, and after, at the most, a few years, their graves are neglected spots that are eyesores to every visitor. Once in a while an effort is made and a little improvement is seen for a short time, but except among some, foreigners by birth, little individual care is taken of burial-places. For this reason family burying-grounds, or small cemeteries carried on by associations, are not usually a success, but are apt, as the writer has known in several instances, to become entirely neglected and deserted. To have a cemetery properly managed it is necessary to employ some one to improve the grounds and keep them in repair. Where cemeteries are small the expense is often what the lot owners are not willing to meet, hence it is best to have as few cemeteries as possible — one large one taking the place of several that are smaller. Skill in laying out and economy in management will then be more likely to be secured.

As said before, cemetery associations on a small scale are not likely to be a success. No funds for improvement can be had and no person will feel enough interested to take the responsibility and time necessary to carry on the work as it should be done, though near a large city private corporations can make money enough out of the business to induce them to invest the money and skill

required. The better way in villages is to make the cemetery a public affair, owned and controlled by the town authorities. The necessary funds for buying and improving the land can easily be raised, and as all will be likely to buy lots there, one good cemetery will take the place of several poor ones. Those who buy lots will have the assurance that the grounds will be a permanent burial place, and probably well cared for, and consequently will be willing to pay better prices than they otherwise would. Experience has shown that a burial place can in this way be made to pay for itself and leave money for improvements and permanent care. Of course, good business management and some skill is necessary to accomplish the double purpose of an attractive, well-cared for burial place, and a paying investment. Of the former it will be my province more particularly to speak as pertaining to tree planting and landscape architecture.

A visitor to any of the older cemeteries of our country will see, in some parts of the grounds, confused masses of slabs, monuments, stone copings, railings, hedges and trees in various stages of neglect and decay. As a rule he will find that a great part of the money spent for improvements has been wasted as far as producing any real beauty is concerned, and that the effect is rather in keeping with the skull and cross-bones and other hideous devices used by our ancestors to make such places dismal and dreary.

Within a few years, however, the influence of such cemeteries as that of Spring Grove, Cincinnati, has made a great change even in our smaller burial places; new ideas in regard to their management have been successfully carried out, and people are beginning to realize what taste and skill can do to make them beautiful. Fortunately the new methods derive their chief merit, not from what is only attainable by the rich, but from what is easily obtained by the poor, and nature herself provides everywhere — grass, trees and flowers. Advantages of soil and location often favor country cemeteries in this respect, trees and flowers being grown at a small cost as compared with those near large cities.

In the laying out of such grounds of course the employment of some one skilled in the business will always pay well for the money spent, but a general knowledge of what needs to be done should be possessed by the managers. A good selection of dry, rolling ground, with some large trees, if possible, is of prime importance. The surface should be graded, at least enough to fill all holes and give good surface drainage, just as would be done in laying out a lawn or park. The drives and walks should be arranged so as to leave the highest and best ground for the lots. This arrangement will usually be a good one for appearance as well as practical use.

After laying out the lots in any convenient shape with no more drives and walks than are needful, the main object is to keep the ground smooth and as free as possible from obstructions in the shape

of mounds and stone-work. One good monument with a small head-stone to each grave is sufficient for any lot, and presents a much better appearance than a greater number of pieces of stone-work. Hedges, railings and stone coping should not be allowed, as they are not only a useless expense, but detract very much from the beauty of the grounds. Even when they look well at first they soon suffer from neglect and decay, and render the work of keeping the grounds in order very expensive.

Trees should be planted on spaces reserved for them, few if any large ones being set on the lots themselves, where they are apt to interfere with graves and monuments. Small trees, shrubs and flowers may be planted on the lots, and can be removed if it becomes necessary.

The spaces reserved for ornamental purposes should be as large as possible consistent with a profitable management of the cemetery. This will give some chance for artistic effect in the grouping of the trees: which should of course be planted by the authorities.

Gravel walks are to be avoided as they do not usually add to the beauty of the place and are difficult to keep free from weeds. Grass is the chief ornament of a lawn or park, and much of the beauty of the cemetery will depend on the care taken to keep it mown. This work can be cheaply and well done where the grounds are laid out as above described, but it is impossible to do it well when they are full of obstructions.

Flower-planting should be encouraged, and may be done by the lot-owners. As it needs to be done every year it tends to keep up an interest in the place; while if neglected at any time there is little left to become an eyesore. Other improvements should usually be made under the direction of the superintendent, as lot-owners often do not use much taste or judgment in such matters.

While it is well to interfere as little as possible with individual tastes and preferences, it will be necessary to place some restrictions on the character of the improvements made by them, and the good of the cemetery will require rules and regulations that will generally be cheerfully complied with when well understood.

Every endeavor must be made to keep the grounds in perfect order. The value of the improvements depends greatly on this one thing, and nothing will make up for neglect in this particular. Therefore all work done should be of a permament character: anything that soon falls into decay being a useless expense.

In conclusion, I earnestly request all to interest themselves in this matter, for it is usually one of great importance and one that demands thought and practical work on the part of some one in every town and village in our country.

ADAPTATION.

BY GEORGE J. KELLOGG, JANESVILLE, WIS.

Mr. President, Ladies and Gentlemen:

Without adaptation what are we good for? With the thermometer at 35° below zero, how would you like to exchange your comfortable robes for Adam and Eve's light morning dress of fig leaves? Time, place, and surroundings make all the difference. If we had all lived in the garden of Eden what a good time we should have had. But with fruit hanging on every tree, the orchard all planted for us, the garden bringing forth lettuce, radishes, beets, onions, asparagus, cauliflower, celery, acres and acres of cabbage, all kinds of potatoes except Early Rose, all kinds of strawberries except Crescent, Vick, and Piper, all kinds of raspberries except Cuthbert, Shaffer's, and Gregg, all kinds of grapes but Prentiss and Pocklington; in fact, what inducements would there have been to work. There was no Fourth of July; no need of any spending money; no taxes, no coal bills; no groceries where you could get trusted, and no need of any dry goods, new bonnets, boots or shoes. Well, if we had all staid in the first garden till now, what a big garden it would have been by this time; but here we are amid the rigors of the northern winter, compelled to hop around lively or freeze to death.

Compare the indolence of the South with the enterprise of the North, and what the difference except adaptation to surroundings?

Adaptation is the key note to all success. Some minds can learn any trade, but seldom excel. Usually the mind that becomes proficient knows nothing else except in his chosen profession. A musician is seldom good for anything else. I have known instances where persons have tried all kinds of business, was too lazy to succeed, and finally went to preaching. A smart blacksmith might make a good lawyer, but there are multitudes of lawyers too lazy to make good blacksmiths. I have known men too lazy for anything but teaching, and thought they were overworked then with six hours a day and five days per week. This reminds me of the old lady who thought the ways of this world *very unequal*. She sat watching those lazy fellows in the meadow, who just made the scythes go "swing, swang," and there she "sat *racking her bones knitting*."

I have often thought I have mistaken my calling. What it could have been I cannot tell. The question important for most of us is, what are our children best *adapted* for? in what business will they be most successful? How many years of patient toil, watching and preparation before some trait will develope to form their destiny.

In the horticultural necessities surrounding us adaptation is everything. How many precious years have we fooled away to learn this one thing, and how little do we now know. After the experi-

ence of last winter and this winter, what varieties of apples shall we have left, and what can we recommend?

I see by your last Report very few varieties of apples mentioned as successful — the leading one, Ben Davis, good for nothing but to sell. Last winter cleaned it out of Wisconsin except in *very favorable locations.*

The line dividing your interests from ours is so fine I never could see it. Have often stepped over it, but never could see it. The State line is very small. Your interests are ours: your adapted lists ought to be safe for our southern counties to follow. We more than ever feel the need of districting the State, and making lists of all kinds of fruits that are particularly adapted to certain soils, elevations, and locations, and that may be safe for new beginners and old fools to follow.

Our most favorable locations are on the highest grounds we have:— the mountains of Baraboo, the bluffs of Richland and La Crosse counties (five hundred feet above the water courses), the lake shore from Kenosha to Green Bay, and the timber ridges with clay and limestone subsoil. In most other locations it is useless to plant anything but the crabs, Duchess of Oldenburg, and Wealthy.

Most farmers want their orchards right by the house, and no matter what the trees want, there they are set usually to die.

I know of no success, permanent, of any orchard that has not a mixture of clay in the subsoil, and the more rock and the poorer the soil for anything else, the more lasting the orchard. The worst places for healthy orchards are our gravel bluffs and bottom lands. In one case it is *all* underdrained, and in the other it needs both under-draining and surface-draining, and *then* it is not fit for trees.

I hope the suggestions of your former secretary, as made in your last volume, page 292, may have been carried out during the past year, and that such committees are prepared to report the conditions of failure and success, soils, subsoils, and the appropriate list of fruits that will best succeed on each.

Small fruits, we all know, are not so very nice about where they put their feet, still they have a choice, and that choice disregarded, they prove a failure. Some varieties of strawberries succeed on all soils, and while the Wilson can hardly be overfed, the Crescent on the same diet would be ruined. Jucunda is worthless on light soil, but a grand success on the right kind of clay, with the right kind of treatment. Sour kinds do best in matted rows, while hills alone for others.

In reading the twenty-five pages of your last report devoted to strawberries, I think only one writer mentions adaptation of soil to varieties, and he mentions only *one kind of strawberry adapted to four kinds of soil.* I see most of your growers and writers have discarded Wilson, yet three-quarters of all the berries shipped into the Chicago market are the much-despised Wilson. I have many cus-

tomers who will have nothing else for canning. Our most successful Wisconsin growers raise mostly Wilson.

There is little danger of over-feeding the raspberry plantation on any soil, but blackberries must not be overfed.

We are apt to starve our currants and over-feed our grapes. The location of the vineyard should be on the best orchard sites, but entirely free from shade. No varieties will succeed with us in poor locations except the Concord type. Best of these is Worden; next Moore's Early and Concord. On clay limestone soils some of the hybrids succeed; on light soils all are failures.

We should classify varieties for certains soils, and so plainly describe those soils that a wayfaring man need not err therein.

Wisconsin has *tens of thousands* of acres of her best adapted fruit lands yet covered by her native forests. The past season has generally been a failure for apples, but we had five hundred to six hundred plates of as fine fruit at the December meeting at Green Bay this winter as is often shown at winter exhibitions.

Thousands of acres of choice pear sites, just like the one described in your last report on page 257, on our lake shore, as far north as Green Bay, remain just as the woodman stripped them of their timber, and thousands of foolish men like myself have thought we could grow all kinds of fruit where we had a mind to, and have tried it for thirty years and failed. Mr. President, we ought all this time to have been raising strawberries, Irish lemons, and white beans.

Insect Pests.—Allow me to call attention to the most alarming of these — the apple gouger — worse than all others combined, the season in which he does his work, extending from bloom till July, makes it almost impossible to poison him. If any of your number have been successful, either by poison or stock feeding, let us hear from them. We meet for mutual benefit, this is our mutual foe, from east to west, from north to south.

Thankful for the kind consideration and generous hospitality your Society has ever shown the members of our Wisconsin State Society, and hoping that we may ever work together in our noble calling, combating the ills of the present, correcting the errors of the past, and winning laurels of perfection in the future, is the wish of your delegate.

THE GRAPE.

BY D. G. PIPER, FORRESTON, ILL.

It has been a question about the cultivation of the grape for ages past, and there seems to be a mystery in the minds of the many as to the simplest mode of its cultivation at this enlightened day and age. Simplicity is the rule. First prepare your soil in the best possible manner, as though you was going to plant corn on it, then put stakes at each end of the rows that you wish to set the vines in; take a

team of horses and a plow, run through often enough throwing the soil out until you have a trench as deep as you wish it; if two feet deep the better; then stretch a line the length of the trench made with the plow. Now we are about ready to set our vines. Always commence at the same end to plant, and set your first vine with a stake for a guide, but make your trenches twelve feet apart for trellis, and set vines six feet apart in the trench. For the first two years plow both ways with a one-horse double-shovel plow. And for stakes alone I would set vines eight feet apart each way, and always cultivate each way with a horse and plow; it saves hand-hoeing and hand-rolling. By the last mode of cultivation named we can grow grapes of the best quality and for a less price. The masses of the people want grapes, and want them as cheaply as they can get them. I would not let more than two young canes stand to each stake; by this method you can astonish the natives with large clusters of grapes. The length of canes may vary from one to four feet in length. This mode needs but little summer pruning. All we have to do in summer pruning is to pull off the surplus vines that come out below the fruit. The advantage of this mode over trellis is, the foliage forms on an umbrella shaped top and protects the fruit from heavy dews and rain.

PRUNING.

Certain individuals claim to prune the vine so as to cause it to fruit, as they say. Vines will not fruit for some people after being pruned. There is only one thing about it — prune enough and use judgment about your work, but do not prune as I have seen a neighbor do. He cut off all the last year's growth and then said that his grapes were a failure. This mode of pruning reminds me of a man going out into his field and cutting off the heads of wheat as they came out, to make it branch and produce a good crop in a poor season. And again the all-wise pruner will tell you unless you prune your vine at a certain time it will bleed to death. This idea appears to be handed down from generation to generation by tradition. If any one will show me a man that has seen a vine bleed to death, I will show you ten thousand that have not seen any such thing. Prune hardy vines from October 20th to June 20th, the following season, but the hardiest vines are better pruned in the fall, before freezing weather, and laid on the ground and a couple of inches of dirt strewn over them, while tender varieties must be protected if you want any fruit from them. If you want well-grown clusters on the tender varieties pinch off the laterals to one joint at first, letting but one leaf remain, but do not pinch off the end of the leading vine as you would be likely to start the buds that were intended for the next year's fruiting. I have had in one season as much as one hundred pounds of Concords from a vine, and all saleable; and I have had Delaware vines produce as much as fifty pounds to the vine, but it is too much in one season — it hurts the vine to let it overbear.

The varieties I have cultivated most are Concord for profit and main crop for market. Hartford for early; good for early market — needs winter protection. Delaware for good qualities and earliness; a great bearer and the standard of excellence in this section, (winter protection). I have tried many others. White Martha is best, equal to Concord for hardiness and productiveness. Diana is good on rather thin ground; needs winter protection. Rogers' 15 is a good red one; 19 is better. Salem is best of the three. Rogers' 3, 4, 9 and 43 are good, but all need winter protection. Harrison is good and an enormous bearer. Brighton is equal to Catawba for flavor, and is one of the earliest to ripen, and I think it as hardy as Concord. I will say right here that my seedling Sophia bore the finest fruit that I had the past season. No winter protection was given to any of my vines last winter; while Rogers' hybrids were frozen to the ground the Sophia was unhurt and bore a good crop. For winter protection, brush thrown over the vines, and leaves thrown among them sufficient to cover the vines, is the best protection we can get for winter. Dirt need not be used when brush and leaves are used.

Apples were a total failure with us in this county last season. There were very few English Golden Russets, so few that we may call it a total failure. There were very few Duchess. There were a great many apple trees killed by the hard freezing of the winter of 1882–'83. Out of seventy-five Walbridge, set in orchard, I lost fifteen trees by freezing; Lawber, out of thirty-four, all came out good. Golden Russet, in seventeen, one lost; Grimes' Golden, in seventeen, one lost; Bailey's Sweet, in seventeen, one lost. Jeffries and Rawle's Janet all right; Domine, fourteen, all hurt; Willow Twig, half hurt. Mann, out of eighty trees ten dead, about twenty half frozen, balance grew pretty well, but the wood was more or less colored. Seventeen Perry Russet all right; Sweet Pear all right; Snow all right; Schiawassa Beauty all right; Wythe, not a bud hurt on root or top-grafted trees; Salome, not a twig or terminal bud was hurt, came out with wood as white apparently in spring as it went into winter with. It appears to be equally as hardy as Duchess of Oldenburg or Whitney's No. 20, which appears to be a model of hardiness. Tetofskey all right; Red Astrachan wood-colored some, but grew well last season. Early Harvest, about all killed; Fall Geniton all right; Sweet June, wood-colored a little, but grew well last season. My soil is very dry rolling prairie and does not hold surplus water.

Cherries — Early Richmond: There were some few trees that bore fair crops in Forreston, but my trees were all frozen to death.

Pears — A few Seckle only.

Raspberries — The Gregg was well loaded wherever I saw it: Cuthbert bore sparingly; Turner was loaded, as it always is with me: Reliance was so loaded the plants bent to the ground with their loads of large berries.

Strawberries were as near a failure as they could be, for what we did get were only knots and buttons.

Most of my berries were in full bloom when the frost of the 7th and 8th of May came, and it froze them to death, and hurt many that were in the bud; and after the frost, what few were left, got washed so much by the excessive heavy rains and cold winds that followed, destroyed the fertilizing power, and the fruit did not set.

Blackberries— Snyder bore but little through this section of country on account of the excessive wet.

PROGRESS IN HORTICULTURE.

BY S. G. MINKLER, OF OSWEGO.

Mr. President, Ladies and Gentlemen of the Horticultural Society of Northern Illinois:

All there is of horticulture within the bounds of this Society is progress. In 1833 (the year I came to Illinois) the ground that your beautiful city stands on belonged to the red man. But soon the pale-faces, so-called by the Indians, found that this land was too valuable for the red men, and they were pushed farther west to give place to agricultural and horticultural pursuits.

Many, in that day, supposed that trees would not grow on the prairie soils because they had not. But it was soon found out that whatever seeds were put in the soil it would bring forth fruit — trees not excepted. Probably, in 1833, there were not five hundred fruit trees within the southern bounds of this Society. I then saw forty or fifty trees set out seven miles north of Ottawa, and they were seedlings brought from Ohio. In '35 or '36 some trees were brought from Ohio and planted by Henry Misner near Newark, then LaSalle County. Two years later some trees were brought in what is now Randall County, by Ebenezer Morgan. They came by the way of the Ohio River. They were well dried up; he buried them in a springy side-hill for three weeks, and by this means he saved a few. My first attempt at horticulture was, I think, in 1836. A Frenchman by the name of Sperha, who settled at the grove before the Sioux war, brought some apple seeds which he planted. They pretty much took care of themselves. However some grew, but being neglected soon stood in grass.

I being anxious to set out some trees, but like the most of the pioneers of that day, without money, I swung the grain cradle for four of these seedlings per day. Surely was not that progress in horticulture. These I top-grafted when scions could be procured. Some time after trees were brought from Edgar County and disseminated through this country. What apples there were were brought from the south in prairie schooners with an apple stuck on a stick for a sign.

In 1833, Arthur Bryant, that veteran in horticulture (I speak with reverence) to whom we owe so much for the progress in horticulture, John A. Kenecott, S. Edwards, Lewis Ellsworth, T. McNaster, Galusha, Dunlap, Whitney, Douglas, and one in your city whose labors show forth his handiwork in and around your city, and others whose energies have been spent in the progress in horticulture. Then horticulture took a new impetus. Societies were formed for the furtherance of the cause. The Northwestern Fruit Growers Association sprang into being. I think the first time I met with this Society was at Dixon in 1852. It took three days to reach there. There the various subjects of horticulture were discussed for the good of the people: "What varieties of apples should we plant." "Best mode of cultivation," etc. Studying the art that doth mend nature, these men, with their co-laborers south, united their energies and formed the Illinois Horticultural Society, of which you are a part, which I think took place in 1864—I may be mistaken as to the date. The men that composed this Society were men of energy, working for the public and finding themselves, spending their energies in the advancement of horticulture. Now what is the result. Look around you. See the orchards, vineyards, gardens, plantations of small fruits, ornamental hedges, flower gardens, lawns and groves, and your cities and towns beautifully adorned by the handiwork of this Society; your cellars filled with the luscious fruits of the orchard and garden to gladden the hearts of the little prattlers around the hearthstone as well as the dame and the sire. Surely horticulture does progress.

Now, instead of fruit being brought to you by prairie schooners as in days of yore, look at the thousands of barrels of fruits consumed in our towns and cities, and the thousands that go to watse some years for the want of means to utilize the same. Now take a walk with me along Water Street, Chicago, and see the immense amount of fruit offered there every day; then go with me to the several dépôts, count the number of cars freighted with strawberries and other fruits in their season. To be sure it does not all come from within the bounds of this Society, nevertheless it is the outcome of progressive horticulture.

UTILIZING OF FRUITS.

BY G. H. CLAYSON, NUNDA.

Mr. President and Gentlemen of the Society:

The subject of utilizing fruits is an important one to the fruit grower. When we take into consideration the millions of money invested, and the vast amount of labor expended in fruit growing, certainly the question is well asked: "How can we best utilize our productions."

There is one kind of our choicest fruits, namely, the strawberry, that must be used or sold while fresh. It is not good canned, and is worthless evaporated. Therefore we say dispose of it as soon after ripening as possible. Every other fruit grown in this latitude is emphatically best evaporated. What is better than the toothsome, delicious, and ever grateful apple as it is now prepared by evaporation? Also the peach, the raspberry, and the cherry. What more delicious pie than that made from the dried or evaporated raspberry? No way can the flavor of any fruit be preserved as well as as by evaporation. Never does such fruit go begging for a remunerative market. In no way does fruit give the general satisfaction to the consuming public that it does put up in this way. I am more and more convinced after another year's trial, that every man that grows fruit to any extent should be master of the situation, I mean, he should control the market (his market in a sense), and this only can be done by drying and evaporation.

Not so with canning. Experience has proven that the canning of fruits requires much skill and a large outlay of capital, which is not always expedient for the moderate producer. But every man that grows fruit for the market can and should prepare all surplus fruit as indicated.

I have during the last month made a trip through Colorado, New Mexico and Arizona, and I assure you my wonder ceased as to what became of the vast amount of canned and dried fruits. Millions of cans and pounds go into these Territories, saying nothing of the others. In Tucson I treated myself to a can of raspberries at sixty cents, and in this I found at least four parts water to two parts berries and the can thrown in.

When you buy evaporated fruit of any kind you know what you are buying, and this you never know when you buy canned goods. The demand more than keeps pace with the production. Europe and other countries are reaching out to us their hands and money, and will, for years to come, take every pound of our surplus evaporated fruits. I would say then, to all growers, dispose of what you can while fresh at paying prices, and the rest or surplus evaporate, and you are then practically masters of the situation.

THE FUTURE OF HORTICULTURE.

BY DR. H. SCHRŒDER, BLOOMINGTON.

Mr. President and Members of this Society:

I was really flattered when invited by your noble Society for my thoughts on the future of horticulture. It seems to me you want a prophet, and since we lost our dear friend, Professor Tice, you have elected me, poor old fellow, for Tice's successor. I know well that a prophet should be an old man, with gray hair and a long white beard, and if I want to keep up decorum I must stop shaving now.

I also believe that man, in a thousand years from now, will be as bald-headed as a flat Dutch cabbage head. I pity only the poor Indians. No more scalps for them from a man, and they must be satisfied with the Scotch poodle-dog scalps of most of our young, fascinating women. No more he scalps then. This is my first prophecy to you; and some one of you younger members will please report to me when you come to Paradise. No exclusion, Mr. President. I know that *every* horticulturist will go to Paradise, as they are needed to beautify and work for the great sun and holiday parties. Let me know, I say, if my prophecy was correct. You will find me in the Lord's, and not in my Bloomington vineyards, in the departments of new white grapes on trial, and the grapes of the Holy Lord.

Now to my second prophecy.

The use of fruits goes along with civilization, refinement, and wealth of our people. I will prove this by historical facts of later dates. I include in horticulture, gardening, or the raising of vegetables and flowers and plants.

To begin with cauliflower. Thirty years ago I brought the first of this aristocratic vegetable into our market. It was then a curiosity to our people. Some took these baldheaded vegetables for doughnuts or sponges — a thousand questions had to be answered as to the use and cooking of the thing. My good lady wife invited many and often her friends to a dish of cauliflower cooked as it ought to be and finely seasoned, and you ought to see how they slickered their tongues; it looked like appetite all over their faces. Now all the gardeners cannot raise enough of this most delicious vegetable.

The asparagus, another and one of the most delicate and wholesome vegetables, I brought to our market. Some men took them for green cigars, others for wooden pegs, and I had to play the professor and a Delmonico, in giving information, history, and instruction. It was tried, and well slickered, but many good housewives did not understand the preparing and cooking of it. O, meine Heiland! what a delicate dish you can make of this vegetable; and to you, my kind lady friends, I appeal in the name of your sweethearts and loving husbands, if want to "zickel am up Schneider," as our good judge, Zack Lawrence, says, give them a dish of fresh tender asparagus. Peel the stalks, put them in boiling water, boil them for ten minutes, fish them out and put them in a flat dish; make a sauce of one teaspoonful of flour, a little cream, a pinch of salt, a little melted butter, and pour it over the asparagus, with a little nutmeg, and then await the result :—embracement after embracement will follow. My old grandmother said: "That is the meal of the angels in the Paradise;" and she knew it well, and this is *one* of my reasons to make my further residence at the Paradise. But besides the good dish, asparagus is one of the best remedies for kidney disease in America — the result of the use of too much glucose and young beer. You will

soon smell the result of this delicate powerful remedy. Now we can hardly furnish all the asparagus plants demanded. Acres of it is grown near our city, and lots of the fruit sent to Chicago. The result of a foreign emigration brought the asparagus into use, and it will increase every year. In my childhood asparagus was only known on the tables of the rich people and in the gardens of the preachers. Nine years ago I saw three thousand acres of it near the two cities of Brunswick and Wolfenbittel, in Germany, with an export of a radius of three hundred miles, and a dozen gigantic canning factories. The profit is from three to five hundred dollars per acre. So it will be in America. Was it not the same with the tomato here?

Now we come to the real fruits. As long as our people had to fight the wolf from the door, and before we had railroads and horticultural societies, fruit culture was not much known. The apple and the peach were the best known fruits, with only a few varieties. Now we have not only the most and finest varieties in the world, but send thousands of barrels to foreign nations over the ocean—the peach in canned and evaporated states. Thirty and twenty years ago we imported thousands of tons of dried fruits from Europe, now we have become exporters, and believe me, the cargoes of plums and prunes we import now will soon cease when our horticulturists have found the remedy to do away with the curculio.

Now let us take the strawberry and see what success it has made. Thirty years ago it was a novelty in our gardens, and only a child's fruit. And where are we now? and as Billy Emerson once wisely said: "Where will we be a thousand years ago?" Hundreds of thousands of acres of strawberries are grown and marketed in every part of the United States, and instead of only the Early Scarlet, we have hundreds of the finest varieties, and there will be no end to it.

Take the once only-in-the-fence-corner-growing blackberry, and see the thousands of acres of the best, sweetest, and largest varieties grown all over our country. The progress is really wonderful.

Take the raspberry in so many forms and varieties, and you will have the same picture.

The currant and the gooseberry culture is only in its first infancy, but they will take the same road their sister berries before mentioned have.

Now we come to two great future fruits, the loveliest of all, the pear and the cherry — both only babies. The cherry is a very easy and most safe fruit to grow in any of our climates and soils, but we need the varieties yet. The Early Richmond is at present leading, but its seedlings or children will soon bring us a still better and safer variety. Then we will have the Bugarow, a hard, sweet, crisp large cherry, like in Germany and Russia, and new and better sorts will be their offspring. It will become the favored fruit of our children, and millions of bushels will be dried and preserved.

The pear is mostly a northern fruit, and is valuable and useful as a delicate food. Much experimenting has been made with the pear, but in the wrong way, as the idea to raise only large fruit was prevailing. Then the importation of French seeds most exclusively, and the hybridizing with soft French varieties was a great failure. Our pear seed should come from North Germany and Russia, with their hardy varieties. The Bergamot, Seckel, Funfer, Grau and Goose pears should be the parents, then we will succeed. I doubt that the now famous Kiefer, LeCount, and Sand pears will be successes as either table or drying pears. They will be novelties of no duration. But do not be discouraged, my friends; —the ever-awake and never-resting American nurseryman and horticulturist will produce us pears of value and duration. My eye is particularly fixed on that noble, thinking, working, philosophic horticulturist, Professor Budd. A few more such patriots and we soon will have the right pear, cherry, plum, and apple, to sweep the country of all worthless trash. Good pears will be as "thick as blackberries."

Now we come to the fruit of the gods and Paradise, the most noble grape.

Go back with me thirty-five and forty years, and nothing but the sour Isabella adorned here and there our gardens. Nicholas Longworth made the first step with the hard-shelled Catawba; then came our never-to-be-forgotten friend, Ball, of Concord, Mass., and brought us the first good grape "for the people"—the Concord. The Delaware, Iona, Diana, Hartford, and the hundreds of seedlings and hybrids followed, till our list got so big that we have to commence sifting. But we are not to the end of perfection, we are only "at it," and every year will bring us new and better varieties. But I will save this long question for another time if your Society wishes to hear me, and I will only say here, that grape culture has only commenced in the West and our State. It is the safest, most profitable, intelligent and easiest occupation of fruit culture there is. There will be more demand for grapes than for potatoes in the future, and if our temperance friends have closed the door of every saloon, brewery and distillery, then grape culture will have its prime days, and be a blessing to our free country. But on this subject I have another lecture in the future.

Wishing you a profitable and happy meeting, I am,

Your friend. DR. H. SCHRŒDER.

Committee appointed to draw up resolutions on the late Dr. Warder presented the following, which were adopted by a rising vote:

WHEREAS, In the providence of God it has pleased His divine will to remove from this field of labor our beloved co-worker and friend, DR. JOHN A. WARDER; therefore,

Resolved, That we deeply regret the loss of our beloved brother, and that whilst we bow in submission to Him who doeth all things well, we have consolation in the belief that his spirit has passed to the land no mortal eye can see or mortal foot hath trod: where trees and flowers ever bloom, never feeling the touch of decay, and where, like the first garden, all is perfection.

Resolved, That we deeply sympathize with the near relatives and friends of the departed, and that we feel that we too have met with a great loss; and that our Secretary be requested to furnish a copy of these resolutions to the family of the deceased.

D. C. Scofield,
H. C. Graves,
Committee.

Remarks of Dr. Humphrey in memory of the late Dr. Warder, of Ohio, which, on motion of Mr. Scofield, were to follow the resolutions:

Mr. President:

I cheerfully accept the invitation of Father Scofield to say a word in memory of our late brother and co-worker in the field of horticulture. I have personally known Dr. Warder for nearly two decades. I knew him to be an honest man, and a man of superior literary and scientific attainments. He was also a man of great energy and perseverance. He spent a long and useful life in our special field. As an author and live-worker in the horticultural field of Ohio, he was the leading spirit and guiding genius for many years. He was especially interested in the horticultural improvement of the Great West, and to this end he often visited many of the Western States. He was so specially interested in our own State that he often claimed it as his home. For a number of years he was nearly always with us at our annual meetings, and freely gave us his ripe experience of many years of study and observation. His words of wisdom are faithfully preserved in the records of our societies. In his literary labors he rose above most men of his time as a great mountain rises in its majesty and overlooks the plain below. He was one of the first to advocate the planting of millions of trees to cover parts of the great treeless areas of the west to forests. He was for many years president of a national forestry association, and visited Europe to study her forestry systems, and wrote out for us his observations, which are published in book form. At a good old age, ripe in experience and rich in wisdom, he finally sinks gently and peacefully in the sleep of death.

President Slade and Mr. Scofield added a few words as friends of the deceased, with much feeling, heartily supporting the remarks of Dr. Humphrey.

As some of the members wished to leave on the 11:30 train, it was moved that we adjourn at 11 o'clock. Carried.

Mr. Bryant moved that the papers be referred to the Publishing Committee for publication. Carried.

Mr. Minkler, chairman on committee to draw up resolutions on Arthur Bryant, Sr., presented the following, which were adopted by a rising vote:

It seems to me that fifty years ago I heard a voice saying, in the wilderness, (not in the wilderness of Judea, but the wilderness of Illinois), "Prepare ye the way of horticulture, of arboriculture, of floriculture, as well as agriculture; for honesty, good morals, for education, religion and enterprise." And this was the voice of our estimable friend Arthur Bryant, Sr., of Princeton, Ill., our beloved brother in Christ and horticulture.

Resolved, That in his death horticulture has lost one of its most zealous advocates and friend, and we, as a society, one to whom we have long looked up to for counsel and guidance.

Resolved, That while we mourn his departure we realize that our loss is his eternal gain.

Resolved, That the Northern Illinois Horticultural Society tender to his bereaved wife and family our sincere sympathy, and commend them to the grace of Him who doeth all things well.

Resolved, That these resolutions pass by a standing vote and uncovered heads.

Final resolutions reported by Arthur Bryant, Jr., unanimously adopted:

First.—That we as members of the Northern Illinois Horticultural Society, tender our hearty thanks to the people of Elgin for kind attentions and courtesies shown us: to the Universalist Church Society for the use of their rooms for our sessions.

Second.—To the hotels for reductions in rates to our members.

Third.—To the Northwestern and Chicago and Milwaukee Railways for concessions in rates over their lines.

Fourth.—To the press of Elgin and Chicago for their kind attention in giving so full an account of our proceedings in their daily papers, thereby placing our labors directly before the public in a way that will be likely to accomplish the most good.

Fifth.—We wish to express our especial thanks to our president for the efficient manner in which he has managed the affairs of the Society, and succeeded in making our present meeting so successful. May his shadow never grow less.

The Society then adjourned to meet again next year in Elgin, at such time as the Executive Committee shall appoint.

E. W. GRAVES,
Recording Secretary.

TOP-GRAFTING THE APPLE.

BY J. V. COTTA, LANARK.

Mr. President and Members of the Horticultural Society of Northern Illinois:

Perhaps there is no topic of horticulture upon which the earnest, practical orchardist, as well as the farmers of the northwest, feels a greater solicitude at the present time, than in the future prospect of the apple as a reliable market and family fruit. Our trees are at best but short-lived, and though other agencies are continuously at work to hasten their destruction, the primary cause of the mischief can only be attributed to their want of hardiness under the trying vicissitudes of our climate. Well nigh half a century has passed away since the first attempts at orcharding were made by the early pioneers of this great prairie region, and to-day we find ourselves face to face with the stern fact that our successes have been few and our failures have been many.

Much good advice has been given for years, and much very bad advice too, in the agricultural press, in essays and other papers published in the transactions of horticultural societies and elsewhere, by men, well-meaning and honest, no doubt, in their opinions, and by men, too, of considerable experience, as to how the many injuries our trees are subject to may be prevented; but as a rule too much is expected by the advocates of the different ideas they represent. So we have, for example, the advocates of low heads and of high heads, or of close planting for protection; others expect by a leaning of the trees toward the one- or two-o'clock sun they will obviate the difficulty; still others advise chalking the trees when taking them up so as to mark the point of compass, that they may be set out again the same way; others again would not prune; others not cultivate to induce slow growth; some lay great stress upon early cultivation only, and the letting the weeds grow the later part of the season for protection; the setting up boards to prevent the sun shining on the bodies is advised by some, or the setting up cornstalks against the stems; a long scion and a short root is claimed by some as a preventive of root-killing; again others attempt to fix the whole question by mulching; while there are those who attribute the whole trouble to the presence of bacteria in the atmosphere, believing that the dead blotches of bark and dead wood on the stems are caused by those infinitesimal organisms, when they should know that after the injury is done by climatic agencies, the deceased parts are attacked by those little creatures only to hasten the decomposition of the affected part. But enough of these theories.

The fact is, the above are all non-essentials in this question, and while some of them are of sufficient importance to merit adequate

recognition, others again are mere fallacies; the intelligent orchardist will know how to discriminate between them.

The unsatisfactory condition of the apple tree in its variations, as we have it in the northwest, will not be surprising when we compare the climatic conditions of this country with the climate of the countries of Western Europe whence the present stock of our assortments originated, viz: England, France and Germany. We should not wonder that our trees can stand so little, but rather that they can endure so much. For mark: they are not only required to stand the sun-heat of Italy, but likewise, and at the same time, the intense cold and dry air of Russia as found between the 50th and 55th parallels of north latitude. The latitude of Chicago (42° north) traced across the Atlantic, through Spain and the Mediteranean, runs across Italy between Rome and Naples. At the same altitude above sea level as our prairies are located, we find in that country an almost perpetual summer, with a climate very similar to that of our own Florida; sub-tropical fruits, such as oranges, lemons, pomegranates, dates, figs, olives, etc., being the regular products of that country on its lower plains; only in the higher valleys and plateaus of the Appenines do we find the apple. We notice, therefore, that neither the fruits of Russia nor of Southern Europe are called upon to endure such extremes of heat and cold as our fruit trees are required to endure. Is it a wonder then that so many kinds succumb to these changes and are short-lived, unhealthy, and unprofitable? We should reflect that the sun's rays during the day heat up the lower part of the trunk considerably more than any other part of the tree, and also that the coldest strata of air at night sinks to the same level owing to its greater weight, so it naturally follows that the bark must be ruptured and separated from the cambium, and the sap cells must be destroyed, producing what is popularly known as *sun-scald*, and noticeable by the blotches of dead bark found on the lower part of the stem after a winter of great severity. The greatest damage always resulting in seasons of extreme depression of temperature (30° or more below zero), while scarcely a trace of this mischief is noticeable after comparatively mild winters when the thermometer does not reach over 15° or 20° below zero.

Trees frequently leaf out in the spring and even blossom and then die. This phenomenon is caused by the sap contained in the branches and twigs becoming liquid; it compels the development of the foliage and blossoms, but no sap being able to pass through the ruptured and deadened stem, the tree dries up when the foliage has evaporated the sap contained in the upper part of the tree. It was practically dead before the advent of spring. Time and again have our nice promising trees been destroyed, and the memorable winter of 1882–83, with its three coldest nights of 35°, 31°, and 29° below zero, caps the climax as one of the most severe and destructive expe-

rienced by orchardists and nurserymen of the Northwest. Well nigh wearied out with the far-too-often-recurring reverses, some of us seem almost ready to accept the list of one of our Wisconsin friends for an orchard of one hundred trees, namely, ninety-nine Duchess and one Duchess of Oldenburg. Not much of an assortment. But hold on. Things are not near as bad as they might be. The trouble has been and is, that we are not willing to suit our methods of propagation to the climate, but expect the climate to come around to our notions, and that perhaps we may not have such a severe winter for many years, and all will go nicely for a while. Well let us see. On the 5th of January, 1884, the thermometer registered from 35° to 38° below zero in different parts of Northern Illinois; pretty tough for that mild winter we expected. No, friends, we must be prepared for the worst if we ever expect to succeed.

The prospect would indeed be discouraging enough were it not for the fact that numerous experiments, made in different localities by earnest, searching, and determined men, and reaching through a series of over thirty-five years, with double-working or top-grafting have been eminently successful in all cases where hardy, reliable stocks were used. These experiments establish beyond controversy that many varieties, too tender to succeed as root-grafts, may be profitably grown in the greater part of our Northwest to become hardy, long-lived trees, bearing better crops of finer fruits then root-grafts to the same sorts. To support this statement I shall introduce a few facts as recorded in the very instructive volumes of transactions of the Iowa and Wisconsin Horticultural Societies, together with my own observations:

Under the head of "Root- and Top-Grafting," Prof. James Matthews, of Knoxville, Iowa, furnished the horticultural society of that state a paper, which appears in the transactions of said society for 1879, pages 403 to 405, of which I will give a brief synopsis. He introduces the problem: Are certain varieties of fruits more hardy and prolific and of superior size, beauty, and flavor, when top-worked upon *hardy stocks*, than when root-grafted in the usual way? Maintaining the affirmative upon this question, he submits a statement of a few facts for the consideration of those whose opinions are adverse to his, as well as for those who have formed no definite conclusions upon this subject. He says: "In April, 1872, I visited the orchard of Mr. Drury Overton, near Knoxville, Iowa. This orchard contained from fifteen hundred to two thousand trees, most of which were planted twenty-three and twenty-four years previous, consequently passed the terrible winters of 1855, '56 and '57. In planting this orchard it so happened that almost every variety set out was divided between root- and top-grafts, hence affording a very favorable opportunity of testing the advantages and disadvantages of the two modes of grafting. Mr. Overton, an old nurseryman, having commenced business about thirty years ago in Henry County,

Iowa, has been engaged in nursery and fruit growing ever since, is a modest and rather reticent man, but one of the closest observers in the State. On the occasion stated Mr. Overton accompanied me, and my subsequent remarks in quotations are substantially and as near as possible, in his own words, and taken down in pencil by me as we passed and were observing each variety:"

White Winter Pearmain—"Does twice as well top-grafted as on root-grafts, but fruit scabs badly even grown in this way."

Early Pennock—"Far better, and perfectly hardy when top-worked; only half hardy and poor bearer when root-grafted."

Hubbardston Nonesuch—"Splendid when top-worked, and perfectly hardy; tender and indifferent when root-grafted."

Dyer—"A good bearer when top-worked; poor bearer when root-grafted."

American Golden Russett—"Killed in '55 to '56, even when top-worked (thermometer 32° below zero), but has been hurt since; perfectly tender root-grafted."

Roxbury Russett—"Does very well top-worked, but will not succeed root-grafted."

Fulton—"Only bears well when top-worked."

Swaar—"First rate, and a good bearer when top-worked, but only succeeds in this way."

Esopno Spitzenburg—"First rate, perfectly hardy and bears well when top-worked, but does not succeed root-grafted."

Porter—"Fine, but only when top-worked."

Little Red Romanite (Gilpin)—"Hardy, and a great bearer when top-worked; not hardy when root-grafted."

Winesap—"Far better and more prolific when top-worked."

Michael Henry Pippin—"Good only when top-worked."

Fall Pippin—"Fine and hardy top-worked; only half hardy root-grafted."

Jonathan—"Far better top-worked standing side by side."

Tulpehooken—"Fine and quite hardy top-worked; only half hardy and variable in quality when root-grafted."

Wagner—"First rate, and don't blight when top-worked."

"In the hard winters above alluded to (1855–'6–'7), Mr. Overton's trees of Rambo, root-grafted, about one hundred, were all killed to the ground, while in Mr. John Gamble's orchard, about one-quarter of a mile distant, there were two trees of this kind, top-grafted, planted out in 1851, which were uninjured, and are now perfectly sound, bearing plentifully."

The Professor then mentions the William's Favorite upon his grounds at Knoxville, some of which are root-grafted and some top-worked four feet above the ground, stating that the latter had been in bearing about ten years, and are by far the most profitable summer apples he has, while five of the root-grafted trees did not, in proportion to age and size, produce as much fruit as one of the top-grafted trees.

The following list of varieties is recommended by the Iowa State Horticultural Society for top-working, and published in the transactions of the Society:

Ben Davis — Should be top-grafted at the north.

Cole's Quince — At the north is better top-worked.

Dyer — Much grown, mostly by top-working.

Cracking — Profitably grown on bluff soils, top-worked on hardy stocks.

Dominie — Short-lived in central district on the prairie, unless top-worked.

Early Pennock — No variety on list will pay better for top-working.

Early Joe — Tree seems hardy, but is a poor grower, hence should be top-worked.

Fall Orange — Does well top-worked on hardy stock at the north.

Grimes' Golden — Grown profitably in central district top-worked, and is doing well north on crab stock.

Hubbardston Nonesuch — Does well in central districts top-worked.

Jonathan — On account of its fine quality this favorite is on northern list for top-working.

Jewetts' Red — Top-worked it is quite hardy on northern prairies.

Lowell — Profitable only when top-worked.

Maiden's Blush — In central district on list for top-working. One of most popular fall apples.

Mother — Recommended top-worked in central district.

Michael Henry Pippin — Does best top-worked even at the south.

Northern Spy — Tardy in coming into bearing. Worthy of trial top-worked.

Newton Pippin — Best on bluff soils and top-worked.

Pewaukee — Likely to become popular. To be top-worked at the north.

Ramsdell's Sweet — Should be top-worked more in central district.

Rambo — Will pay in central district top-worked.

Rome Beauty — About like Rambo in hardiness.

Romanite — Not hardy north unless top-worked.

Smoke-House — Does well top-worked in central district.

Willow Twig — To be top-worked north.

Westfield Seek-no-further — Does well top-worked in central district on the prairie.

Wagner — Short-lived in most parts of the State, unless top-worked on hardy stocks.

Mr. E. Wilcox, of La Crosse, Wisconsin, in transactions of the Wisconsin State Horticultural Society for 1880–'81, p. 127, quotes from the report of 1872: "Mr. Tuttle (Baraboo, Wis.) recommended the Transcendant crab for a stock to top-work the standard apple on,

and said: "I have full faith that this method of top-grafting on a hardy stock will insure us a hardier class of trees than those grown in the ordinary way. I believe it from the fact that wherever the experiment has been tried it has worked well."

Mr. E. C. Wamsley, near Polo, Ill., has top-grafted Rambo and Maiden Blush trees on his grounds, over thirty years old, which have been very productive, and are still in vigorous condition, bidding fair to last a good many years yet. Root-grafted trees of these varieties are tender, short-lived and unprofitable.

In 1872 I top-grafted Grimes' Golden and planted them the following spring in orchard; they commenced bearing in '78 and have borne nicely every year since, except last season, when they made however a good wood-growth, apparently uninjured. Root-grafted, the Grimes' Golden were severely damaged in 1872 and '73, and again in '77 and '78; many of them being destroyed. I have not root-grafted this kind since.

I have the following varieties top-worked about four feet above the ground, in my nursery, mostly upon Whiting No. 20 stems: Red Astrachen, Early Harvest, Early Colton, Early Excelsior, Lester's Beauty, Sweet June, Chenango Strawberry, Cole's Quince, Baily Sweet, Garfield, Porter, Lanark, Sweet Russet, Ben Davis, Cayuga Redstreak, Clark's Orange, Grimes' Golden, Isham Sweet, Jonathan, Mann, Pewaukee, Wythe and Willow Twig. All of these passed through last winter apparently uninjured, not a twig nor a bud hurt; they all made a fine growth the past summer, ripened up the young growth nicely, hence going into winter quarters in good condition.

Now let us compare my root-grafted trees with the above, standing in same block upon the same kind of soil, having received the same cultivation and care:

Uninjured — Duchess of Oldenburg and Tetofskey.

Slightly hurt — Walbridge and Nelson's Sweet.

Considerably injured — Wealthy, Hass, Shiawassee Beauty and Fameuse.

Severely damaged — Early Harvest, Red Astrachan, Sweet June, Bailey Sweet, Cole's Quince, Plumb's Cider, Porter, Baltimore, Maryland Redstreak, Pewaukee and Talman Sweet.

Partly killed — Sweet Pear, Price's Sweet and Lyman's Large Yellow.

Nearly all killed — Ben Davis and Mann.

All killed — Hill's Red, Colburn, Koshkonong and Willow Twig.

Of a number of Russian and other North-of-Europe varieties which come highly recommended for hardiness and other good qualities, I have on trial, both root- and top-grafted, none of the latter sustained any injury, while some of the root-grafted ones were killed back to the snow-line, others were more or less damaged, and a very few of them came through all right. We may reasonably conclude, therefore, that the greater number of those kinds intro-

duced of late years from Northern Europe will be rejected, as but very few of them offer any advancement over our own well-known sorts. Still we are advancing. Many earnest, intelligent, and determined cultivators are at work testing, hybridizing, experimenting, and we may reasonably hope that in the not remote future we shall have an assortment that shall, in hardiness, productiveness and general value, exceed anything we are now acquainted with.

And now I would most earnestly appeal to the nurserymen of not only Northron Illinois, but of the entire Northwest, to give this matter their earnest attention. It is certainly high time that we should get out of the old rut of propagating our trees by a method that has been weighed in the balance so many years and found wanting. Our people have a right to look to the nursery trade for a supply of a class of trees adapted to the peculiarities of our climate, and they will cheerfully pay an extra price for trees worth the money. The nurseryman, on the other hand, can well afford to propagate them thus, if he can realize a price that will remunerate him for the extra labor, expense, and time required for the purpose. Shall it be done?

HORTICULTURAL SOCIETY

OF

CENTRAL ILLINOIS.

OFFICERS FOR 1884.

President — H. M. Dunlap. Savoy.
Vice-President — A. G. Humphrey, Galesburg.
Secretary — O. B. Galusha. Peoria.
Treasurer — M. A. Baldwin, Jacksonville.

CONSTITUTION.

ART. 1. This association shall be known as the HORTICULTURAL SOCIETY OF CENTRAL ILLINOIS.

ART. 2. It shall embrace the counties of Adams, Brown, Cass, Champaign, Christian, Coles, DeWitt, Douglas, Edgar, Fulton, Ford, Iroquois, Hancock, Henderson, Knox, Logan, Livingston, McLean, McDonough, Mason, Marshall, Mercer, Menard, Morgan, Macon, Moultrie, Peoria, Pike, Piatt, Sangamon, Shelby, Schuyler, Scott, Stark, Vermilion, Tazewell, Warren, and Woodford.

ART. 3. Its object shall be the advancement of the Science of Pomology and the Art of Horticulture.

ART. 4. Its members shall consist of annual members paying an annual fee of one dollar.

ART. 5. Its officers shall consist of a President, Vice-President, Secretary and Treasurer.

ART. 6. The President and Secretary may call meetings of the Society at such time and place as they may think will be for the interests of the Society.

ART. This constitution may be amended at any regular meeting by a two-thirds vote of the members present.

There will be a meeting of this Society for Essays and Discussions during the summer or autumn, the time and place of which are not yet determined, but will be duly advertised in the agricultural papers.

O. B. GALUSHA, Peoria,
Secretary.

PROCEEDINGS

OF THE

HORTICULTURAL SOCIETY

OF

SOUTHERN ILLINOIS.

Annual Meeting Held at Alton, Dec. 5, 1883.

Reported for Publication by E. A. Riehl, Secretary.

OFFICERS FOR 1884.

President—E. A. Riehl, Alton.
First Vice-President—G. W. Endicott, Villa Ridge.
Second Vice-President—Wm. Jackson, Godfrey.
Secretary and Treasurer—E. Hollister, Alton.

CONSTITUTION.

Art. I. This Association shall be known as the Horticultural Society of Southern Illinois.

Art. 2. Its object shall be the advancement of horticulture as relating to fruit growing, floriculture and home adornment.

Art. 3. Its members shall consist of members of all local horticultural societies of the southern fruit district of Illinois, who shall be members without fee, and other persons taking an interest in horticulture, and paying the sum of one dollar annually.

Art. 4. Its officers shall consist of a President, First and Second Vice-President, and a Secretary who shall also be Treasurer.

Art. 5. The officers shall be elected at the annual meeting and hold their offices until their successors are elected.

Art. 6. The President, Vice-Presidents and Secretary shall constitute an Executive Board, and have the general management of its affairs.

Art. 7. The Society shall hold meetings annually and at such other times as may be directed by the Executive Board.

Art. 8. This constitution may be amended at any regular meeting by a two-thirds vote of the members present.

REGULAR PROCEEDINGS.

The Horticultural Society of Southern Illinois met December 5, 1883, at the office of Captain E. Hollister, in Alton.

The President and Vice-President being both absent, Hon. John M. Pearson was called to the chair.

Capt. Hollister presented a draft of a constitution for this Society, which, after slight alterations, was adopted.

The election of officers resulted as follows:

President — E. A. Riehl, Alton.
First Vice-President — G. W. Endicott, Villa Ridge.
Second Vice-President — Wm. Jackson, Godfrey.
Secretary and Treasurer — E. Hollister, Alton.

It was then moved to make a short list of fruits to be recommended for general planting in this district, which was done with the following result:

APPLES FOR MARKET.

Summer — Red Astrachan, Keswick Codlin, Benoni, Sops of Wine and Maiden's Blush.

Fall — It was unanimously agreed that fall apples were not profitable for market purposes.

Winter — Ben Davis, Rome Beauty, Jonathan, Winesap, Winter May, Gilpin, Janet.

APPLES FOR FAMILY USE.

Summer — Early Harvest, Red Astrachan, C. R. June, Benoni, Maiden's Blush, Bailey Sweet, Fameuse.

Fall — Fall Wine, Rambo, Grimes' Golden, Yellow Bellflower.

Winter — Jonathan, Rome Beauty, Winesap, Ben Davis, Janet, Gilpin, Moore's Sweet, Sweet Vandever.

PEARS FOR MARKET.

Bartlett, Howett, Duchess.

PEARS FOR FAMILY USE.

Bartlett, Seckel, Howell, White Doyenne, Anjou, Sheldon.

PEACHES — FAMILY AND MARKET.

Alexander, Mountain Rose, Large Early York, Old Mixon Free, Crawford's Late, Stump, Piquet's Late, Smock, Salway, Heath Cling.

GRAPES — HOME USE AND MARKET.

Worden or Concord, Cynthiana, Norton's Virginia, Missouri Riesling, Noah, Ives.

STRAWBERRIES — HOME USE AND MARKET.

Captain Jack, Downing, Wilson.

RASPBERRIES.

Black Caps — Doolittle and Gregg.
Reds — Cuthbert, Brandywine, and Turner for home use only.

The attendance was smaller than usual, many who had intended coming having been kept away by the extreme cold weather, the thermometer indicating from twenty-four to thirty-two degrees below zero at sunrise, being colder than anything ever before experienced in this section by those present.

It was too early to make examinations to determine the damage done to fruit, but it was the general opinion of members that the peaches and some cherries must be killed, and other fruits seriously damaged.

E. A. RIEHL,
Secretary.

PROCEEDINGS

OF THE

KANKAKEE VALLEY

HORTICULTURAL SOCIETY.

FOR THE YEAR 1883.

Reported for publication by LEN. SMALL, Secretary.

FEBRUARY MEETING.*

The Society held its monthly meeting Saturday afternoon, February 10, in the Supervisor's room, Kankakee. President Milo Barnard in the chair.

Minutes of last meeting read and approved.

H. S. Bloom reported for the committee to select subjects for discussion during the year, as follows:

February — Pruning.
March — Best varieties of Fruit to Plant.
April — Variety of Vegetables; Forestry.
May — Floricultural.
June — Strawberries.
August — How shall we prevent our boys from leaving the farm?
September — Injurious Insects; Blights; Diseases of Plants.
October — Harvesting and storing Fruits and Vegetables.
November — Review of the Year's work.
December — Annual Meeting; Election of Officers.

Query Box always open. Questions from those living at a distance may be mailed to the secretary.

Written communications concerning horticultural improvement solicited from each town and neighborhood.

Mr. Henry Mortimer, Committee on Orchards, read an excellent report.

* The proceedings of the January Meeting, together with the names of officers and committees for 1883, are printed in Volume XVI, pages 362-369.

L. E. Cunningham — Will the ice on the trees injure or benefit the fruit crop the coming season?

In answer, several members expressed the opinion that it would not be detrimental.

L. E. Cunningham was called on for an essay; and after a few well-chosen remarks he proceeded to read a paper entitled "Education Practical *vs.* Education Fashionable."

The subject for this meeting's consideration, "Pruning," was then discussed.

A. L. Miner — I have had a little practical experience in this line. Part of my orchard has never had a limb cut off. It is alive and doing well. The rest of it was trimmed and is all dead. I would advise trimming trees while young, but after they are set in the orchard never cut off a limb.

Henry Mortimer — To trim intelligently we should be acquainted with the tree or variety. Perry Russett needs to be pruned. Do not cut the branches back, but cut them off; while Belmont is an excellent apple, if you trim the tree it will decay. When we have had an orchard bearing for several years the lower limbs will be dead. We should cut them off, for they draw the moisture from the tree. In conclusion, Mr. Mortimer said: "Prune the trees when young; cut off the dead limbs; paint the stubs."

A. H. Burt — Why does pruning an apple tree prevent it from bearing? In the East, where I came from, orchards are trimmed every year, or at least bi-annually, and they bear well. It is generally conceded that the flow of sap, etc., will concentrate in the part of the tree that is left, and make finer and better fruit. Is it to prevent rapid evaporation that you leave the branches?

A. L. Miner — It is to prevent scalding?

A Voice — What is scalding?

H. S. Bloom — When trees lean to the northeast, and the sun's rays are permitted to strike the trunk from the southwest, and the heat kills that side of the tree, it is called sun-scald.

President Barnard — Two-thirds of the orchards south of me in my neighborhood have been ruined by being trimmed by traveling

men who styled themselves "professional pruners." In reply to Mr. Burt, I would say that orchards down east live one hundred and fifty years, while here twenty-five years is a fair average. The climate and soil are very different.

T. C. Dickinson — Would not advise any one to trim if they wish to save their trees; but I think we can get better fruit by pruning.

MISCELLANEOUS BUSINESS.

A. L. Miner broached the subject of replanting orchards, and said: "I think, by properly enriching the ground, we can fill the vacancies in our old orchards with success.

Mr. Mortimer, having had much experience in this work, answered to the effect that generally it is not advisable to replant old orchards, but plant on new ground.

A. H. Burt moved that a committee be appointed to examine into the feasibility of publishing a paper for this Society.

The motion was thoroughly discussed, and it was moved to amend by inserting after the word "paper," "or the proceedings of the meetings in pamphlet form." And the motion was adopted as amended. The committee, as appointed, consisted of Messrs. Burt, Bloom, Mortimer, and Len. Small.

Prof. F. N. Tracy, A. L. Miner, and L. E. Cunningham paid their membership fees.

Adjourned to meet the second Saturday of March.

MARCH MEETING.

The Society held its monthly meeting Saturday afternoon, March 10th, in the Supervisors' Room, Kankakee. The attendance was exceedingly good.

Meeting called to order at 1:30, President Barnard in the chair.

Minutes of the last meeting were read and approved.

Next in order being the report of Special Committees, the following was read, and on motion of A. L. Miner, adopted:

Mr. President:

The committee appointed to examine into the feasibility of publishing a horticultural paper or printing the proceedings of the Society in pamphlet form, submit the following report:

Considering it impracticable to publish a paper, we received sealed bids from the printing offices of this city, to print, monthly, the proceedings of the Society. We find the lowest bid is given by the Times office.

Believing it to be low enough to warrant a trial we recommend the Society to take action with a view to publishing its proceedings for the remainder of the year of 1883.

A. H. Burt,
Henry Mortimer,
Henry S. Bloom,
Len. Small,
Committee.

Following this report several motions were made that failed to pass, and an extended discussion ensued, participated in by Messrs. Burt, Bloom, M. Barnard, A. L. Small, Mortimer, Miner, Cunningham, O. W. Barnard, Lane, Mrs. Decker and others.

It was moved and carried that we accept the *Times*' bid, which, in substance, is as follows:

"We agree to furnish five hundred copies of the proceedings of the Kankakee Valley Horticultural Society, loose sheets, same as sample exhibited, for ninety-five cents per page.

Livingston & Shaw."

ORCHARDS.

Mr. Mortimer, committee, reported verbally that the fruit buds of cherry trees, as far as he has observed, are dead, and apples considerably injured.

VEGETABLES.

Mr. Cunningham, committee:

Mr. President:

My report upon vegetables and small fruits must necessarily be short at this time of the year. As far as I can learn a great many potatoes have been frozen. Those not injured have kept remarkably well. Turnips likewise. Many strawberries are fresh looking, although they lay under a complete coating of ice under the covering. Raspberry canes, in my judgment, have not been injured in the least. The Lawton blackberry will, I think, give me some fruit. The Concord grape, I think, will give two-thirds of a crop. Cherries are reported killed again. I have faith in getting a pretty fair crop.

ESSAYS.

Chair called upon Mr. A. H. Burt, one of the regular essayists, who read the following

PAPER ON FLORICULTURE.

BY A. H. BURT.

The indifference with which some people regard the beauty of nature indicates the lack of one of the mental functions from which may be derived a pure and exquisitely agreeable pleasure.

The desire for what is ornament is legitimate, even the heights and breadths of its development through cultivation.

The strict utilitarian who touches nothing but what will turn into money, has his own species of enjoyment, but is not the kind that smooths the wrinkles on the brow of age, and yields to its retirement agreeable food for reflection.

He who uses in his business life the hours that mind and body demand for recreation, contracts the possibilities of his happiness. Some men consider flowers trash. They can see beauty in trees, in the fields of waving grain, in the carpet of green that covers meadow and pasture, but 'tis beauty born from the conciousness that the golden grain means dollars; the tree is shade, comfort and fruit; the grass is fine steers, butter, milk — it means dollars. The dollars are useful in the economy of exchange; they are convenient and a source of pleasure.

But there are other considerations which sharpen enjoyment: among them are the investigations in the great arcana of nature. The real benefactors of the world are those men who never had wealth for an object, who did not look for money in the unheaved rocks and ledges — formations of the ages; but they unfolded the mysteries of the pre-historic eye, and this knowledge helps to satisfy one of the wants of the race. He who devoted his life to the dangers and privations of forest and flood, that he might know the animals of earth, their habits and history, was not after money; but he gave the world's scientists facts from which grew evolutions,—the relations of growth. He was the pioneer of data that agitates the literary moralists of the world.

Like the zoölogical hunter was the ornithologist; for months alone with nature and the birds. The geographer devoted his life in searching new lands, not for money; — succeeding generations reaped the reward—he, too often, a posthumous honor.

And the botanist, was he searching among the flowers for gold? Did he examine stem and petal, leaf, fibre, root and rootlet for money? It was a higher reward that spurred him on. We have results of his observation and labor.

The botanist saw that the flora of earth was unlike, and yet alike in form. Kinds varied, yet there were similarities, and from them slowly evolved a systematic classification.

Occasionally a man tells me: "I would not give you a cent for every flower you have," and yet before he has made the circuit of the greenhouse will request the man for half a dozen plants. He sees something that demands his attention, arouses his curiosity, arouses, perhaps, a sentiment that only sleeps because the object that could awaken it had never been seen. He would have smiled with incredulity had he been told he could see beauty in a flower, to raise a sentiment of pleasure and involuntarily draw words of praise. I have seen men, after the most heartless disregard for your feelings, uttering words of deepest, wholesale contempt, pause before a flower, here and there, and say: "That is pretty," "That is a handsome thing." One man has declared, more than once, he would trample upon the choicest flower as soon as the vilest weed of the field.

Some men, in the struggle for competence that often never comes, and as often delays its coming until the very evening of middle life, have dwarfed or extinguished the power to derive satisfaction from anything outside of the narrow sphere by whose walls time has slowly environed them. In such we do not look for that generous breadth of mind and discernment that can see the diamond beyond the rough covering — the finger of God in the ornamental creation.

I have yet to see the first boy that does not look with honest admiration upon a collection of flowers. The gay colors attract him strangely; before them he stands the longest time. Every faculty a boy possesses is ready for action as soon as its corresponding object is seen. All development beyond this is the result of cultivation. The passion is just awakened, afterward comes the growth.

In my younger days I was accustomed to see in my mother's flower garden the annuals and shrubs, that now might be truly called the "rare plants," but I was not conscious of their beauty. I have no recollection of deriving satisfaction from their existence there.

The feeling that *wants*, the passion that *loves*, was yet unborn. My botanical studies at school were ended, the local flora dissected, analyzed and classed; still I never looked on a flower and said, sincerely, "It is beautiful." The birth, the awakening, was reserved for maturer years.

A few years ago I was introduced to two ladies in a window garden of flowers. There I fell in love — not with the ladies — with the brightness and cheer of that bit of green. A full-grown "sea onion" was wonderously magnificent to me, and the tangled smilax, from which soon after was gathered a tribute of love for a sweet little girl called to eternity, awakened a slumbering faculty; and I saw a new use for flowers, and have gathered them around me ever since.

As every rich, lucious fruit satisfies a craving of the physical nature, so every plant and flower, by its graceful form and inimitable color, is to satisfy a mental craving.

The physical appetite discovers its need first. Our mental necessities are so varied that we may live three-score and ten years, and never be conscious that we are losing the richness that is scattered along our pathway.

We cannot expect to go over the whole ground of the world's flora, for then it becomes an exhaustive work.

Let the plants, flowers and trees, each day brought under our observation, teach what they will, receive it.

Discoveries come unbidden; you may see a truth that Linnæus passed unheeded by.

In our own local flora are found the same colors and forms, the same laws of reproduction and growth, the same structure of cell and function of parts, as are found in those of other climes.

With similarity there is endless variation. A primal stage of growth exhibits conditions that are modified or entirely changed in after growth. Location and climate create dissimilarities. The lessons of our own flora are long and interesting.

Scattered over the prairies of the west are many species of plants worthy of cultivation. If reports of the pioneers be true, many of them, which once flourished in wild profusion, have disappeared entirely, or can only be found occasionally. If no one has made an effort to preserve those species it is now time to begin.

A few of our prairie flowers are now cultivated in the east, and the seed of some species that almost rank as weeds here, are sold in large quanties in Europe.

Cassia Chamæcrista, that grows along our roadside in abundance, its black-centered yellow blossom, almost unheeded by us, is considered choice in Germany.

Right here is where some of our good foreign friends who come over to become American citizens overreach themselves. A German friend of mine, thinking nothing so good as that which had the fragrance of the Fatherland sticking to it, sent across the sea for his flower seeds; being ignorant of our native flora, he included in his list some of our native species, which might have been gathered at his own door. Among others he sent for "Cassia, choice or mixed." He gave me some of the seed saying they were very choice, "I gets them from Shermany." I planted them and watered and watched them with that delightful uncertainty that always clings to the "new and very choice." As they grew I recognized them as old acquaintances. They bloomed, and behold they were *Cassia Chamæcrista*.

Dodecatheon, another Maine flower of merit, is cultivated in the east. I see no reason why this flower cannot be forced as well as

Cyclamen. They grow in the toughest prairie sod, and if you wish to dig any be sure and have a good spade.

Once, unthinkingly, I sent to to D. M. Ferry for *Eupatorium Purpureum*. It is found in abundance, especially on low grounds of unbroken pasture. Fortunately not a seed germinated, and I was saved the anxiety of watching the seed develop into purple *boneset*. A little botanical knowledge is sometimes very useful.

I wish those who notice any prairie flower growing scarce would make an effort to save roots or seeds. It is my intention to preserve every genus and variety possessing the least merit, and as this will be a matter of time, coöperative effort will lighten the labor.

In the study of ornamental plants is a wide field of pleasure. You have only to plant and to begin to attend to them to discover that they are worth your attention, and will pay. They are not trash. God never made any trash. What we called a vile weed once, now gives us the strongest fibers. Ragweed itself may contain the panacea to quiet your pain and restore health.

At its conclusion Mrs. Izetta Dole was called for, but as the day was stormy, and she lived some distance, she had not arrived, but had kindly sent her paper, which was read by the Secretary.

OUR BIRDS OF SONG.

BY MRS. IZETTA DOLE.

It is almost the season for the birds to again charm us with their beautiful songs. Already a few have ventured from their sunny southern homes, reminding us that it is not always winter: although even in winter, when everything outside is cold and dreary, we can make it seem like summer by having flowers and birds in our houses. The bluejay and the little snowbird stay with us all winter, and though the plumage of the bluejay is beautiful, his notes are harsh and disagreeable.

The first birds to come back in the spring are the blackbirds and robins. The blackbirds congregate on the tops of the highest trees and hold grand concerts, making the whole air ring with their melodious notes. I know they are not generally considered as fine singers, but underlying their louder harsh notes is a sweet melody, that sounds like the waters of a little brook rippling over pebbles.

I have heard that some of the members begrudge the fruit that the robins eat; but I would willingly give them the few berries they want for the sake of their company, for when I am out picking fruit, especially cherries, they often dispute my right to the property, and are so cunning and saucy one cannot help admiring their impudence.

The sweetest singer in this part of the State is the brown thrush. Who has not been charmed in the early spring mornings by its liquid flutelike notes? It has but few notes, but they possess a sweetness beyond description.

The plumage of the restless little hummingbirds is the most beautiful and brilliant, and it is a source of great pleasure to watch them as they dart from flower to flower gathering their accustomed food.

The swallow is another bird that every one is familiar with, that comes quite early in the spring. Last year, just after they had commenced building their nests in the little house they have occupied for years the bluebirds tried to drive them away. The swallows, however, never left their houses alone for an instant, one of them being on guard all the time. It was amusing to watch the manœuvres of the blue birds. They would fly away as though they had given up the contest, but would shortly return from a different direction. The swallows never relaxed their vigilance though, and then what a chattering and scolding there would be. Finally the bluebirds did give up, and left the swallows to finish their nests in peace.

Even if the birds did nothing but charm us with their songs, and delight the eye with their brilliant plumage and graceful movements, most of us, at least, would not be willing to have them destroyed, or mourn over the fruit they eat; but besides that, they more than pay for their food by destroying injurious insects.

I think it rather absurd to put me down for an essay, when there are so many here that could do so much better than I can; but if I have said anything to interest or amuse any one I shall feel repaid for my efforts.

The subject, "Best varieties of Fruits to plant," was then discussed. Varieties of apples were first considered.

Mr. Mortimer was called. He said by planting hardy kinds we are sure to have some fruit every year. Duchess of Oldenburg is perhaps the best early variety. It is an ironclad. I think it will stand a temperature thirty to forty degrees below zero. Wealthy is another of our ironclads, and can be depended upon. Maiden's Blush I prefer for fall. It is one of our very best fruits, and when it fails we have nothing to fall back upon but the ironclads. Lowell is also an excellent apple, but bears only on alternate years. Of raspberries I believe the Turner will stand any cold we have here.

Dr. Small being called upon, replied to the effect that the varieties named by Mr. Mortimer, with the addition of Ben Davis, are among the best.

A. L. Miner — Smith's Cider is good. Northern Spy paid me well last year. Rambo and Cayuga Red Streak bear well most every year.

Mr. Mortimer — Of Ben Davis I have some that are very inferior. In other places they are excellent. I think we are hardly in the latitude for Ben Davis unless we have a southern slope to plant upon.

A. L. Miner — My orchard is set on the north side of a sandhill. I have had no experience with the Ben Davis myself, but one of my neighbors has as fine and thrifty looking an orchard of this variety as I ever saw. The speaker also mentioned other Ben Davis orchards that are doing well.

A. H. Burt — Does any one know anything about the Strawberry apple?

Answer — There are several different varieties of trees in this section which are called the Strawberry apple; most of them are short lived.

Mr. Mellon was called. My experience is rather limited, but I have two varieties that have not be spoken of here that did the best with me: they are the Romanite and Little Romanite. The Minkler keeps well. If I was to say anything about the Northern Spy, I would say plant as few of them as possible.

T. C. Dickinson — I have a Roman Stem that has been bearing four successive years. Russets bear well, but the fruit is inferior. Mr. Dickinson spoke about girdling trees, and in connection with that subject, said: "If I had trees that did not bear I would cut the bark at the ground and strip it up to the limbs, and I think they would bear one good crop of fruit."

Mr. Cooper — I have some fifty varieties of apples; none of them have been doing me justice, or else I have not been doing them justice. I do not feel prepared to recommend any varieties. Of those I have, Lowell is the best for fall. Duchess of Oldenburg for summer. Ben Davis has borne a few crops of fine looking apples, but they are so inferior in quality that it takes a person who is almost starved to relish them; they have not been old enough to bear but about seven years, and they begin to show signs of decay. Of small fruits: Raspberries — Black Cap varieties; Strawberries — Monarch of the West,

Green, Prolific, and Wilson; Gooseberries — Houghton; Currants — Red Dutch, have all done well.

A. L. Small — To what do you attribute the failure of your Ben Davis trees? Do they winter-kill?

Mr. Cooper — No, sir; they blight and sun-scald. Some of the trees are all dead.

Mr. Bloom, in answer to Mr. Burt's inquiry about the Strawberry apple, said he had raised the late or Chenango Strawberry, a very fine apple, good size, good bearer, tree not long lived. Was also acquainted with the Early Strawberry apple; tree moderately vigorous, good bearer of a beautiful small apple, that was always in great request with the children. Little Red Romanites; tree quite vigorous, an immense bearer of rather a small apple of inferior quality, but a great keeper, lasts till the following July. Maiden's Blush; in my judgment one of the best autumn varieties, bearing every year a moderately fair crop of beautiful smooth apples, of good size, excellent for drying; tree hardy with me. Red Astrachan; tree a vigorous grower, moderately hardy with me, good bearer of good sized apples, excellent for cooking; too sour for dessert; season, August. American Summer Pearmain; tree a moderately fair grower, hardy with me; fruit good size, oblong; quality, best. Early Red June; tree hardy, a good bearer every alternate year; fruit of medium size, dark red, and of good quality. Northern Spy; tree moderately hardy, but late coming into bearing; bears alternately if it has plenty of room and sunlight; fruit of good size and quality. Rawles' Janet; tree vigorous and hardy, and an immense bearer while young of good fair fruit that keeps well; trees with me rather short-lived. Soil on which the above trees were grown is a rich clay loam, gravelly subsoil, near timber.

President Barnard — One part of the subject that has not been spoken of, is in regard to new varieties. If we are to have long lived trees that succeed well in this climate we must find them among our native seedlings. The President then read some extracts from the transactions of the Indiana Horticultural Society for 1881, page 128, and also a letter from Mr. B. O. Curtis, Paris, Ill., in regard to the Utter, Lanis Red Streak, Housonis Choice, Pear Flavor, and Hanna apples, of which the writer spoke very highly as being long-lived trees.

Mr. Cooper — I am acquainted with Lanis Red Streak. My recollection is that it never paid for setting.

MISCELLANEOUS

It was moved and carried that a committee be appointed to revise the constitution and report before next November. The Chair appointed as such committee, Len. Small, H. S. Bloom, A. H. Burt.

On motion of the Secretary T. C. Dickinson was appointed to open the discussion on "Varieties of Vegetables," and the President to open the discussion on "Forestry," at the next meeting.

The Secretary moved that each member who pays, or has paid, the annual membership fee for 1883, be entitled to a copy of our printed transactions, and also to one line on the membership page for their name, address, and business. Adopted.

L. E. Cunningham exhibited some box elder (ash-leaved maple) syrup, that was tested by the members.

A. S. Cutler, A. Mellon, and A. H. Burt, paid their membership fees.

Adjourned to meet the second Saturday of April, in Kankakee.

APRIL MEETING.

The April meeting was called to order at 2:15 by President Milo Barnard.

Minutes read and approved.

COMMUNICATIONS.

H. S. Bloom read a letter from Hon. W. H. Ragan, Secretary of the Indiana State Horticultural Society, in which he stated that he had sent our Society the transactions of their last meeting.

On motion a vote of thanks was extended to Mr. Ragan.

The following paper was then read:

RENEWING THE FRUIT GARDEN.

BY DR. A. L. SMALL.

If we keep our fruit gardens productive and reap from them such harvests of fruit as we are entitled to expect, we must replant much oftener than is usually practised. The importance of the frequent renewal of fruit plantations is well understood and acted upon by the wide-awake and progressive market gardener, but does not seem to be realized by the average possessor of the fruit garden. The usual way is to allow the old plants to stand year after year, bearing each year less fruit and of poorer quality.

This is the season for planting. Let us commence to reform by putting out a few young plants of strawberries, raspberries, blackberries and grapes, even if the number of plants of each kind is very small. Prepare your ground well, cultivate and take care of them, and you will be amazed at the amount and quality of the fruit you will get. Next year plant a few more, and so on each year, and you will thus keep up a constant annual supply of these fruits. You do not need to go to the nurseryman or tree-peddler for your supply of young plants. Strawberries, raspberries, and blackberries all furnish you an abundance of young plants without any extra care on your part, and young plants of grapes can be so easily grown from layers, that the labor and care of growing them is hardly worth mentioning.

Do not put off planting this spring because you think you have not time to make what you consider a respectable plantation, if you do, the probabilities are that you will be in the same situation next spring, and so put it off from year to year and do without the fruit.

Almost every man has, at some time of his life, become convinced of the value and importance of a fruit garden for his family —a good one was planted, and for one, two, or three years, and possibly longer, if well cared for, an abundance of good fruit was supplied the family, but after a very few years there was no more good fruit grown, and the inferior fruit produced was hardly worth gathering.

While the garden was producing an abundance the owner and planter took great satisfaction in congratulating himself that his duty as a fruit planter had been performed for a life-time. That was the fatal error. Had he realized the importance of renewing his plantation, and practised the planting of a few new beds or rows each year, the productiveness of the garden might have been fully maintained.

Of varieties I will say but little. Plant anything that you or your neighbors have found productive and good.

Attend our meetings this summer and bring samples of your fruit, each in its season, and we will then be better able to decide which are the best varieties for us to plant.

DISCUSSION ON THE ESSAY.

President Barnard — In our neighborhood the owners of fruit gardens are putting out young plants, as the essayist advises.

A. H. Burt — As Doctor Small is a nurseryman, modesty prevents him from saying some things that I would add. In starting your fruit garden it will prove most satisfactory to procure good plants from some reliable nurseryman.

L. E. Cunningham — I last season sent off a long distance for Gregg raspberries, and the plants are doing very poorly. I attribute this to the difference in soil. Would advise getting plants from the nearest reliable grower whose soil is similar to that in which you wish to plant.

T. C. Dickinson — It is cheaper to get plants from neighbors when good ones can be obtained.

H. S. Bloom — Renew currants often.

L. E. Cunningham — Renew raspberries every five years and strawberries every three years. In regard to grapes. Is there anything lost by keeping the old root or parent stock and cutting them back, which would be a renewal of tops but not of roots? Some of my best fruit comes from vines treated in this way.

Milo Barnard — I am trying this experiment in my vineyard this year.

VARIETIES OF VEGETABLES.

T. C. Dickinson, having been previously appointed to open this this discussion, stated that in his remarks he would confine himself to the varieties that he had tried and succeeded with and considered suitable for the farmer to plant. He then proceeded as follows: Of potatoes, for the main crop, Early Ohio I consider the very best early; Whipple's Seedlings for late; for trial, Beauty of Hebron, Clark's No. 1, and Improved Peachblows are highly recommended. Peas: D. M. Ferry & Co.'s Extra Early are good; McLean's Little Gem is one of the best; for a late kind, the Champion of England; for trial, Bless' American Wonder and Culverwell's Telegraph. Beans: D. M. Ferry & Co.'s Golden Wax; Ivory Pod Wax is about two weeks later; Royal Dwarf Kidney is the best late bean I have raised; for pole beans Dreer's Improved Lima. Tomatoes do not

come true to name. There are usually several varieties in one package, and the plants that I have bought in town were mixed even worse. Lettuce: Ferry's Early Prize Head.

The best way for farmers to do is to procure D. M. Ferry's or Sibley's catalogue, whose complete description and information concerning the habits of plants will aid them in selecting those which are suitable for their purpose. All vegetables in the farmer's garden should be grown in rows far enough apart to be cultivated with a horse. They should plant the whole garden about the same time. I plow my ground well, that is, I use a plow that will scour and turn the top or surface earth under as little as possible. In planting potatoes after plowing the garden well, I mark it out with the same plow, plowing the furrows about four inches deep and cover by plowing a little deeper so as not to move the seed. As soon as the potatoes begin to come up harrow the ground level.

Question — What time would you plant potatoes?

Answer — About the 25th of April.

A. H. Burt — Ferry's Prize lettuce I have grown for years and consider it the tenderest variety.

President Barnard — I would not approve of planting all kinds of vegetables on the same day. Radishes and lettuce should be planted early when the weather is cool.

T. C. Dickinson — If you plant radishes and lettuce in the same rows, the lettuce will shade the radish so that they will be tender for a long time.

H. S. Bloom — Lettuce can be planted early if on rich ground. For snap beans,— early, Black; late, Giant Wax.

Mrs. Decker — Radishes sown in July for fall use are the best.

Question — When should winter radishes be sown?

Answer — June or July.

Question — How can radishes be kept nice and crisp?

Answer — Store them away in sand.

L. E. Cunningham — Of peas Champion of England is the finest in existence. Tomatoes: Trophy is unsurpassed. I do not think shoving the earth one side is plowing; I want to turn the top under if I can; right bottom side up.

H. S. Bloom — A great many years ago, when I was a boy, we used to plow with wooden moldboards which, of course, did not turn the top under, and we raised mammoth crops of corn.

A. H. Burt — In planting sweet potatoes if we throw two furrows together by back furrowing and leave the ground on each side hard, will it prevent the tubers from running out long and spreading in the ground?

Answer, a voice — Yes.

DISCUSSION ON FORESTRY.

Opened by President Milo Barnard:

In a forty-minute discussion on Forestry one is at a loss where to commence on account of the vastness of the subject. The width, depth, and length of this question precludes the possibility of doing it justice in so limited a space of time. Weeks of discussion, and whole volumes filled with the subject matter, would fail to exhaust this interesting as well as useful subject. The time is not far distant when the preservation, the renewal, and the planting of new forests will be considered one of the most important questions that can engage the attention of the individual tiller of the soil, of states and nations. The question may properly be divided into the following heads or propositions, each of which is susceptible of almost innumerable subdivisions:

The necessity and utility of forest planting.
The mode or manner of doing the work.
What to plant.
And will it pay.

The last proposition is partially contained in the first, for anything that is necessary and of utility, pays, although it may not directly in dollars and cents, according to the modern acceptation of the term. Now if I should add the preservation of forests I will have laid out work enough to occupy our members for many meetings, for embraced within the points here given, I find that there was sixty-eight papers catalogued at the Forestry Congress held in Montreal last August, composed of four hundred and forty-five participants, and although they divided the congress into three sections, and continued their labors for three days, yet, for want of time, perhaps half the papers presented could not be read except by title. And for our little society to attempt the discussion of such a deep and far-reaching problem seems almost futile. But as small rivulets united form the river, every little helping, so the small streams of knowledge converging to the same point, must form the broad river of practical knowledge on the subject of forestry that must sweep

over the land if we would avert a disastrous timber famine in the near future. I shall confine my few remarks to the first proposition: the necessity and utility of forest planting. We find that nature has made it incumbent on us to keep at least a portion of the earth's surface covered with timber, in order that we may attain to the highest type of manhood, both physically and mentally, for it has been fully demonstrated that the inhabitants of entirely treeless regions are inferior to those dwelling in forests or in their immediate vicinity. It is not alone the eucalyptus, or blue-green tree, that has the power of imparting health and salubrity to malarial and fever-stricken localities, but all tree-growth has more or less influence in this direction, absorbing the noxious vapors and gases that would prove deleterious and poisonous to animal life. And it has been further demonstrated that the greatest success in agriculture is attained where at least one-fourth of the area is covered with forests, — the three-fourths of farm land yielding as much, estimating for a series of years, as the whole would without timber, if situated in a treeless country, as crops are more uniform in localities where forests abound. The horticulturist needs the protection of timber, and needs it badly to enable him to achieve success in his favorite calling. Should any one doubt the beneficial influence of forests in this regard, let them consult the early settlers in any timbered country, and they will learn that when the country was new and mostly covered with timber, they grew fruit with the same ease and success they did corn, pumpkins, and potatoes. But now, where timber is mostly cut away, the crop is nearly as uncertain as on the open prairie. We want our steep hill-sides covered with timber, also the margins of streams, especially about their sources, to equalize the amount of water in their channels, and to aid in preventing the damaging floods that have become painfully numerous of late. We want extensive general tree-planting throughout the vast stretch of open country lying between us and the Rocky Mountains. This seems an urgent necessity to temper the winter wind and check its rate of speed; in this way alone can we hope to soften the fury of the dreaded blizzard, the lion of the northwest. By this means also may be checked and moistened the dry, hot winds that produce such havoc in the southwest; and the dreadful norther, the dread of the Texas stockmen, could be measurably prevented by the same means. The devastating, life-destroying cyclones and tornadoes that have their home in this region, would be shorn of a part of their awful power at least, could we cover one-fourth of the land with timber, and when this is accomplished, this now sterile waste will become the home of millions of prosperous, happy tillers of the soil.

As to the necessity and utility of timber on every prairie farm there can be no question, for every intelligent, observing person realizes the great need of groves and belts of trees for ornament, shade and shelter, and to furnish a ready supply of timber for the

thousand and one needs of the farmer. But perhaps no phase of the forestry question will have so great an interest for the average farmer, or more likely to arouse the general public, than the promulgation of the fact that our available supply of lumber material is rapidly diminishing, and very soon the end will be reached. Michigan had left standing last fall 29,000,000,000 feet of pine lumber, which will last seven years at the present rate of cutting, as her lumbermen are cutting over 4,000,000,000 feet annually — over forty hundred million. Wisconsin has 41,000,000,000 feet, which will last twenty years at the present rate of cutting. Minnesota has 6,100,000,000 feet, which will last ten years. Now these are the main sources of supply for all the western country and much of the south; at the present rate of cutting this supply will be exhausted in eleven years, and yet our late congress saw not the necessity of removing the tariff on lumber. Pennsylvania has pine enough to last five years, and hemlock to last fifteen years. Maine has spruce and pine enough to last sixteen years. New Hampshire does not return a single pine tree, but has black spruce enough to last ten years at the present rate of consumption. It is true that some of the southern states have pine enough to last them a long time at the present rate of cutting, as they are cutting very slowly. Texas, for instance, has enough to last three hundred years, but the Michigan lumbermen, at their present rate, would clear Texas in five years. It is not only pine, but all other lumber trees are getting scarce. Fifty thousand acres, mostly hardwood, are stripped each year for railroad ties alone. When I was a boy black-walnut lumber sold from $10 to $15 per thousand feet, and now $75 to $100 is demanded, and other kinds of hardwood lumber are perhaps four times as high as they were forty years ago.

L. E. Cunningham — I have ash-leaved maple twelve years old, fifteen inches in diameter, and this year I made five gallons of syrup from a few of these trees.

Mrs. Mary Barnard — I noticed in an article written by S. Chase that he says that the forests of Maine that are now being cut, will, in twenty-five years, have trees large enough to use for lumber.

BEST VARIETIES OF SMALL FRUITS.

L. E. Cunningham — It is well understood that for this locality there is no cherry equal to the Early Richmond. Raspberries — black, the Gregg; red, Turner is the best. Blackberries — Snyder and Kittatinny. Strawberries — I consider the Crescent superior; plant with Sharpless, Wilson or Bidwell for fertilizers.

T. C. Dickinson — The Turner should be planted where it can be controlled.

President Barnard — The Turner has never bothered me. The sprouts are as easy to kill as weeds, but where we confine them to rows and keep the sprouts all cut off, we must renew the plants often.

MISCELLANEOUS.

Len. Small moved that the amounts offered in premiums for strawberries and flowers at the June meeting be limited to $15 and $10 respectively. Adopted.

It was moved and carried that fifty copies of the printed transactions be distributed among the members at each meeting, and that the remaining four hundred and fifty be reserved until the end of the year.

It was moved and carried that Messrs. Bloom, Cunningham and Barnard act as a committee to prepare the premium list on strawberries.

Arrangement of the premiums on flowers was referred to the Flower Committee.

The Secretary was instructed to announce that the next meeting will be a basket picnic.

The following committees were elected for next meeting:

To provide Tables and Seats — D. E. Barnard and H. Peters.

Arrangement of Tables — Miss Nellie Peters, Mrs. Izetta Dole, and Mrs. B. G. Lee.

John S. Hixson joined the Society.

Adjourned.

MAY MEETING.

The Society held its May meeting at the pleasant residence and grounds of Mr. Milo Peters, Manteno, May 12, 1883. The attendance was good, notwithstanding many members living in distant parts of the county were kept at home by the pressure of spring work.

Quite a number of the citizens of Manteno favored us with their presence.

The forenoon was agreeably passed by the company in friendly converse: music and flowers contributing to the enjoyment.

At half-past one the guests, numbering about a hundred members and friends of the Society, were invited to partake of an excellent dinner, which did great credit, as our picnic tables always have done, to the culinary skill of our lady members. The tables were tastefully decorated with cut-flowers, also furnished and arranged by the ladies.

At three o'clock President Milo Barnard called the meeting to order. Minutes of last meeting approved. The report of the Vegetable Committee was then read by Committeeman L. E. Cunningham, as follows:

VEGETABLES.

BY L. E. CUNNINGHAM.

Mr. President:

As you are aware, the spring had been very backward, so cold that horticulture, so far as gardening is concerned, has been severely chilled, and I am compelled to report that the chill is still unbroken. However, there is nothing very discouraging in the prospect, for all seeds planted are germinating fully up to the average season. Potatoes planted are coming up very evenly, and far above the average acreage is now in the ground. A fortune is anticipated at twenty-five cents per bushel, and but little trouble expected from the beetle, I having seen but one living bug, and that one didn't live long after discovery. I will say here that I have planted fifteen varieties of potatoes, all upon rich soil, and all will get cultivation thorough and equal, and next October, health permitting, I expect to give the Society a full and detailed account of my experiment. The grapes are badly injured as far as I can learn; strawberries never looked better with me than this spring, much later than last year and promising a good yield of fruit. I believe I promised our horticultural friends (at our last meeting) a good crop of cherries, and I renew the promise, nothing occurring to prevent hereafter. Raspberries are very promising. I am obliged to report against the prevailing opinion on the hardiness of the Snyder blackberry, stating that the Lawton stood the severity of the winter much better than the Snyder; this may seem strange, but nevertheless it is true with reference to my own fruit gardens. For all kinds of fruit (except grapes) our prospect is rarely ever better at this time of the year.

DISCUSSION ON THE REPORT.

President Barnard — What the committee have reported is true in general in my neighborhood, except in regard to grapes and Snyder blackberries. There is a prospect of a good crop of the former, and the Snyder is hardier than the Lawton blackberry.

J. B. Lee — I have been informed that in Wisconsin the Snyder passed through last winter all right.

Mr. Wright — My Kittatinny blackberries are all killed down to the ground.

Mr. Cunningham — Apples are in better condition for fruiting than I have seen them for several years.

Milo Barnard — I notice the English Golden Russet, which have borne very little of late years, are blossoming this season.

The chair called upon O. W. Barnard, essayist, who arose, and after a few interesting remarks, read the following poem:

THE PEACE OF THE PRAIRIE.

BY O. W. BARNARD.

Out from the city's toil and strife,
Away from its struggling masses there
He comes and brings his fair young wife
To breathe the peaceful prairie air.
They quit the city's dust and din —
Its stifling air — its dens of sin!

Their home has been the city wide,
They've ever dwelt beneath its glare,
But here no longer they'll abide —
Yet both are young, and she is fair.
They leave behind its smoke and dust,
Its hollow heart — its dark distrust,

And seek a place to build a home,
Where laughing breezes wander free;
Far from the city's haunts they roam,
Where flow'rs are smiling o'er the lea.
Where Freedom's breath is on the air,
And landscapes green are fresh and fair.

Where 'neath the broad expanse of heaven
Is spread a teeming, virgin soil,
The grandest gift to him ere given!
Who bears his arm to useful toil.
Where healthful breezes sport and play
And golden sunshine gilds the day.

Here from their toil a home up-springs,
Adorned with sweet and modest grace,
While in their hearts Contentment sings,
And Peace is smiling o'er the place.
Where Taste adorns with tree and vine,
And Hope's bright pinions ever shine.

Where Summer's heat and Winter's cold
Are tempered to a just degree—
Where happiness their heart's enfold,
And children come with merry glee.
Where, in the Springtime's balmy days
Is heard the song-birds' tuneful lays.

Where all the air is pure and clear,
And every night brings sweet repose—
Where smiling morn awakes to cheer,
And every day with rapture glows.
While hands are busy—and the mind
Is free and blithesome as the wind.

They till their fields with pride and care,
While Ceres binds her ripened sheaves—
Pomona's gifts are treasured there,
When Autumn sheds her golden leaves.
While health and hope beam from their eyes
As gleams the light from morning skies.

This man and wife have learned full well
To prize the beauty of their home,
Where laughing children come to dwell,
Nor far away e'er care to roam—
Were born to dwell amid these joys
So fresh and pure to girls and boys.

This peaceful life they highly prize,
Where bolts and locks are seldom known—
A life that's free from prying eyes,
And all around they feel's their own,
Where independent thought abounds
And Nature's voice so sweet resounds.

'Tis true that toil their days engage,
But sweetened by the conscious thought
That Labor all their wants assuage,
And Plenty by his hand is brought—
That Labor gives them hope and health—
Boons dearer than the city's wealth.

No dusty street with ceaseless tread,
Where Crime stalks rampant through the day,
Where starving beggars sue for bread,
And Fashion rules with ruthless sway.
Where idle Folly flaunts in silk
And babes drink liquid chalk for milk.

Where Traffic's gaze with jealous eye
Is fixed upon a subject world;
Who boasts her tribute, none deny,
While o'er all seas her flags unfurled—
Where every scheme, though foul or fair,
Is boldly grasped to swell her share.

Where scents of gas and garbage rise,
And trees and plants begrimed with smoke
Offensive to the taste and eyes,
That all the finer feelings choke;
Where sewage taints the cooling draught
And every baleful bev'rage quaffed.

Where gold is sought at any cost,
And hearts beguiled by Pride's red flame—
Where honest aims of life are lost,
And Justice hides her head in shame.
Where wealth becomes mere gilded show,
And poverty a wail of woe.

But here amid home's sweetest charms,
Far from the city's seething tide,
They never know its wild alarms
Nor feel its breath of pompous pride—
Nor 'mid these scenes has ever yet
Ebbed back the tide of vain regret.

Full two decades of life serene
Have winged their sunny flight away—
Success stood by with smiling mien
While health and wealth have borne full sway.
Their children grown to manhood's state
Endowed with many a noble trait.

Sweet converse they with nature hold
Which gives their lives a calm content—
They do not feel they'r growing old,
Though fifty years of life are spent.
Nor do they know old age, or pains,
For manhood's vigor still remains.

But soon old age comes stealing on,
Yet lightly lays his withered hand—
The buoyant step at length is gone
But life's broad stream flows smooth and grand,
And gliding down through peaceful vales
'Neath sunny skies unswept by gales.

They rest in peaceful, calm content,
Full conscious of their happy choice
That honest hearts, with pure intent,
Must e'er with peace and hope rejoice,
And ever cluster 'round the spot
Dear memories that ne'er forgot.

Thus life's graind aim is here attained,
Where hope and peace give calm repose
Its highest purpose haply gained—
No shadows darken 'round its close,
Its eve grown radient in the glow
Of grand achievements here below.

Discussion on Floriculture was opened by the following paper:

THE NEED OF FLOWERS.

BY MRS. G. DECKER.

Who needs flowers most, the old or young? It has long been a question in my mind. We all need them. Flowers are the symbols of all that is pure and true in this life, and they teach us to hope for a life to come. Fancy yourself on a lone sea-girt island; even there they will beam forth and speak of the wond'rous love of Him who inhabits the furthermost island of the deep, and forgets not even there to place these bright messengers of love, and remind us that God is everywhere.

The aged need flowers as they turn and gently walk on the down hill road of life: to them they are the reminders of the happy past.

I often think how careful my mother was of her hollyhocks, lilacs, honeysuckles, and roses. They are blessed reminders of many a pleasing episode, therefore keep and cherish them, and when the aged form has lain down for that sleep which comes sooner or later to all, crown the whitened locks with the flowers which she so loved and tended.

The *young* need flowers; they teach the road to purity and honor. To us all they are sermons, which come not from the voice of man, but from the heart of the lovely blossom, as it silently whispers, "I am the resurrection and the life." Is it rest to care for flowers? Try it, you who have not, and become convinced. We forget sickness, pain, care, and trouble; we become so interested in the beauties of nature which surround us as to forget self, and live in what we for the moment behold.

The youth need flowers to make them better, to purify and elevate their morals, to remind them of the beautiful beyond. We all need flowers, the rich and poor, high and low, for they come to each from the same bountiful hand. How the poor woman treasures her flowers—next to her children they are housed and protected from

the cold. The rich find another way to enjoy them; they give employment to the poor and educate the masses. Now let us have flowers everywhere;—there is nothing that will cheer a sick room like a bouquet. Put them in the saloons;—let their perfume rise, and it *may be* will lead the wanderer to think of home and the spot where his mother cultivated them. If we wear them in our hearts they will root out all envy and jealousy, and love must reign.

I think spring flowers are more beautiful than later ones, for they are more cheering after a cold and gloomy winter. There is the beautiful crocus, emblem of purity; and the knowing pansy, with its upturned face, always recognizing some one; the sweet hyacinth with its variety of colors; and the tulips, and all the other beautiful flowers — Oh! my, I cannot do them justice.

I have not heard from many gardens and seen only a few, but as far as seen or heard from everything is doing well except roses, of which the tops were badly frozen.

L. E. Cunningham — I never saw my roses in such a fix before; the tops were all frozen.

In answer to the question: "Are rose bushes killed?" Mrs. Dr. Merrick, Mrs. Mary Barnard, Mrs. N. B. Pratt, and several other ladies replied that they are badly injured.

Mrs. Mary Barnard — Is there any known remedy for the rose slug?

Mrs. Pratt — I have used carbolic preparations and whale oil, and when these failed picked them off with my fingers.

Mrs. F. Mann — My roses are all killed. I am collecting and cultivating wild flowers and plants.

MISCELLANEOUS.

O. W. Barnard, chairman of the Finance Committee, reported as additions to the 1883 membership list the following gentlemen and their wives: P. P. Nelson, Milo R. Peters, R. S. Gilkerson, P. M. Wright, Rev. Wm. Campbell, F. Ellingwood, B. G. Lee, H. J. Beedy, J. R. Lockey, A. H. Dole, R. A. Perry, J. P. Haughn, L. S. Smith, N. B. Pratt, John McElroy, Lowell Wood, E. W. Hume and Mrs. L. B. Smith, Messrs. C. E. Holmes, A. L. Morey, and C. M. Wright.

The President tendered the thanks of the Society to Mr. and Mrs. Peters for the generous provision they had made for the accommodation and comfort of the Society's meeting.

Reference was made to the next meeting, and a pressing invitation was extended to all to be present.

On motion they adjourned.

THE JUNE MEETING.

The annual Strawberry and Rose Fair of the Valley Horticultural Society will be held on the grounds of R. H. Enos, Kankakee, on Saturday, June 16, it being postponed from the second to the third Saturday of the month. The premiums offered are:

PREMIUMS ON STRAWBERRIES.

Greatest and Best Display of Strawberries	$3.00
Second best	2.00
Third best	1.00
Best named variety, one quart	2.00
Second best	1.50
Third best	1.00
Best quart of Sharpless	1.00
Best quart of Wilson	1.00
Best quart of Crescent	1.00
Best quart of Cumberland Triumph	1.00

No one variety will be awarded two premiums excepting in display.

All berries competing for premiums to become the property of the Society and will be sold to defray expenses.

H. S. BLOOM,
Chairman of Committee.

PREMIUMS ON FLOWERS.

Largest collection of ever-blooming Roses	$2.00
Second largest	1.00
Third largest	.50
Largest collection of June Roses	2.00
Second largest	1.00
Third largest	.50
Best Bouquet	1.00
Second best	.50
Best Rose Bouquet	.50
Best collection of Pansies	1.00

The following committees have been selected:—To provide seats, tables, etc., Messrs. Burt, Bloom, and Cunningham; Arrangement of tables, Mrs. Lucy Gray, Mrs. Elias Powell, Mrs. Chas. Moore, Mrs. Lamb, Mrs. Chas. Eggleston, Mrs. Mary J. Barnard, Misses Susie Small, Emma Bird, Helen N. Peck, Grace Morgan.

It will be an all-day picnic meeting, and ample arrangements will be made for a large gathering. Horticulturists will address the company. All are cordially invited. Bring your baskets.

JUNE MEETING.

The Society met pursuant to adjournment on the fine grounds of R. H. Enos, at Kankakee, June 16th.

Although in the morning the cloudy sky seemed to portend weather unfavorable to a picnic, the company, numbering about two hundred persons, assembled in good season.

Liberal preparation had been made for the accommodation and entertainment of all.

The display of Strawberries and Flowers was better than had been anticipated, and attracted much attention.

In the northeastern portion of the spacious lawn, in the shadow of stately pines, the tables were placed, where, after an invocation by Rev. Mr. Worrall, a most delicious repast was partaken of.

When this had been duly enjoyed the meeting was called to order by President M. Barnard, and the exercises were opened with a song by the glee club, consisting of Messrs. Samuel B. and Frank McGrew, Warren Christian, Arthur and Walter Dale.

The President reminded the Society that no preparations had been made for a Fourth of July meeting, and suggested that some action be taken with regard to it, stating that it might be best to dispense with that meeting.

On motion of the Secretary it was unanimously decided that when we adjourn we do so to meet on the 11th of August, at Salina Grange Hall.

Reports of Standing Committees called for. Henry Mortimer reported as follows:

ORCHARDS.

Mr. President:

Not having been through the county this spring I am only able to report for my immediate neighborhood. Some orchards have a fair crop of apples, while others have only a few. With me the Fameuse is probably the most promising. Next in productiveness

comes the Duchess, while such fine varieties as Peck's Pleasant and and Seek-no-Further will give us a small crop. The Maiden's Blush also promises a good crop, as well as some other kinds. The Early Richmond cherry was badly damaged by the cold of last winter, and I think some further injury was done by the freeze of last month. While some trees will produce only a few scattering cherries, others, being more favorably located, will probably yield from one-fourth to one-third of a crop. The few pear trees in my vicinity bloomed well, but the young fruit dropped off. Taken altogether the crop of tree fruits will not be a large one, and I believe that the outlook for such fruits for some years to come is not good. Most of our trees are too old and too closely planted to promise much for the future. We must plant trees every year in order to keep up our supply of fruit.

A. L. Miner, of Momence — Mr. Mortimer's report, in regard to apples, will apply very well to the eastern part of the county. We will have a good supply of Early Richmond cherries. The Morello is doing poorly this season.

Mr. Mellon stated that the condition of fruit in the southern part of the county is similar to that just reported by Mr. Mortimer of Manteno.

R. A. Lane, of Bonfield, said that he did not have much to add to Mr. Mortimer's report. Of apples in his neighborhood there would be from one-fourth to one-half a crop. For cherries the outlook is rather better than has been represented, and a fair crop is expected.

VINEYARDS.

P. A. Bonvallet, committee, sent the following report:

BELLE PARK, ILL., June 4, 1883.

Vineyards are all right excepting those in *good rich land*, ten per cent. of which is cut off by frost. This makes me more inclined to trust *poor land for grapes;* furthermore we are expecting a higher market. Vines are fully loaded with promising bunches. We expect to suffer no loss from our vines that were cut off by frost as they had not been pruned, and are pruning them now, believing it to be the best time, as a large quantity of the buds are now swelling.

Mr. Bonvallet's report of last meeting was received too late for publication. He is experimenting in three different methods of pruning, and will inform us in regard to the result.

VEGETABLES.

L. E. Cunningham, committee, made a verbal report.

COMMUNICATIONS.

The Secretary read a card from Hon. W. S. Hawker, our representative, in which he stated that the State Horticultural Society Appropriation Bill had passed both houses. Mr. Hawker's efforts in behalf of this bill are highly appreciated.

The Glee Club here rendered a comic selection, which was much enjoyed.

The President stated that B. N. McKinstry was absent on account of ill-health, and then called upon Prof. F. N. Tracy, the essayist of the day:

HORTICULTURAL.

BY F. N. TRACY.

The position now accorded to horticulture of being at the acme of agriculture has not been attained by any isolated achievement, or in any brief period of time. Like all other enterprises it has had its seasons of success and its times of defeat in its advance towards the high position which it now occupies among the industries and civilizing agencies of the world. Francis Bacon says: "God Almighty first planted a garden."

According to Pliny, among the Romans the art attained an advanced stage, especially in the department known as floriculture. The ladies cherished their gardens of violets, roses, and other fragrant flowers with quite as high regard as that in which they are held at the present time. Some of the choicest plants and flowers, which we are wont to regard as rare and new, were cultivated and called by names in their own tongue by the ancient Greeks. Notwithstanding this art had made such great progress at so early a day by the overthrow of Rome it received a blow, after which long years passed before it began to be revived.

In France, Charlemagne did not neglect to number gardening among the many civilizing enterprises to which he gave his attention. He regarded it of so much importance that he prescribed the plants to be grown in the gardens which he established by royal edict. By this example other countries were led to make much advancement, and at the close of the sixteenth century the famous garden founded by Henry IV, at Montpelier, France, contained over thirteen hundred choice plants. But the period from which horticulture, as a science, may be said to have made steady progress, takes

its beginning from the time when conservatories were first constructed. This occurred early in the eighteenth century. Then followed the progress attained by educating young persons for the especial occupation of gardening. The next great and effective agency in promoting horticulture has been the formation of the various societies throughout this country and Great Britain. These societies date their origin from the beginning of the present century, and owe their beginning to the establishment of the London society through the influence of Mr. Knight, Mr. Wedgewood, and Sir Joseph Banks.

The outgrowth of this and other societies which soon sprang up in Germany and other countries, has been the formation of experimental conservatories, and the organization of societies devoted to especial departments of horticulture, such as the pomological, floriculture, forestry, etc. Not the least result in importance has been the very large and valuable literature that has been produced.

It is true that long centuries before the formation of these societies some works had been written, noticeable among which may be mentioned Robert Evelyn's "Sylva, or a Discourse on Forest Trees," written at the request of the Royal Society, in 1664, because the naval commissioner feared ship timber would become scarce. Many English land owners were influenced by this work to plant young oaks, which furnished the navy yards of the next century.

This example of tree planting should, perhaps, be imitated by owners of the prairies, if not for the sake of the future navy yards, for the sake of the lumber yards as well as for protection and ornamentation.

But since the formation of horticultural societies there has been a large accumulation of works upon general subjects, including the instructive, entertaining and humorous, and while England has large works far superior, the United States is not surpassed in the excellence of the smaller works upon the various departments of horticulture.

It is often claimed that the civilization of a country may be determined by knowing the amount of iron used. May it not as well be said that the stage of progress a people have attained can be ascertained by consulting their advancement in horticulture.

Bacon, in speaking of a garden, says: "It is the greatest refreshment to the spirits of man; without which buildings and palaces are but gross handiworks, and a man shall ever see, that, when ages grow to civility and elegancy, men come to build stately sooner than to garden finely; as if gardening were the greater perfection." There is an inspiration in simply reading a description of his ideal garden, or rather gardens, for he would have one for each month in the year, in which "severally things of beauty may be then in season." While Bacon in speaking of what he calls "princely gardens," consisting of thirty acres, in which, in its season, he would have every-

thing known to possess beauty or fragrance, as well as all fruits that are delicious, may seem to be treating of that which is far beyond the attainments of mankind in general, is it not possible for us of humbler station to have some of the real enjoyment in kind, if not in quantity, of which he speaks?

What is more elevating than the communion one has with nature as he watches the progress of some plant from its germination from a small seed till finally there is a budding, then the opening of the flower and the exhalation of the most fragrant perfume? What a source of education there is in the planting and cultivating of fruit trees, till one becomes familiar with all their wants and characteristics, as well as versed in the knowledge of the various varieties to such extent as to be able to say (the soil of any locality being known) what kind must be planted to ensure a bountiful harvest.

As the advancement of the civilization of nations is seen to keep pace with their progress in horticulture, so are those cities and communities best and most refined where the taste for the beautiful is cultivated to the greatest extent. I say this with all the more pleasure because I believe there are few counties where there is a more general cultivation in this regard than than there is in this. Every home is made truly homelike by plants and flowers. Perhaps I am partial, but it seems to me that this has exerted a very appreciable influence upon the young people of this city.

It has already been stated that very great progress has been made in the past century, and indeed the advancement in the past forty years has been very satisfactory in the United States. The Massachusetts and Pennsylvania societies have led the work, and at present Illinois and other States are well to the front.

But as Dudley Warner was fully convinced at the close of his summer spent in the garden, that everything in it had its enemy, unless it might be the pusley, so too the horticulturalist finds that everything he would bring to perfection has its besetting evil. Even the strawberry, of which it has been said, "God doubtless might have made a better berry than the strawberry, but doubtless he never did." That berry which we are met here to practically discuss to-day. The berry (which our merchants bring to us in the spring from the south, and follow as its season of ripening goes northward, till months later we are receiving it from as far to the north of us as at first it was obtained from the south) has its enemies.

Every producer of strawberries recognizes the fact, that as bountiful and delicious as this crop is when successful, it is only made so as the result of careful study and watchfulness. The excessive cold of winter, the tendencies of the plant to produce too soon, and to multiply itself by shooting forth the troublesome runners, the Lachnosterna, and many other enemies have to be guarded against. Then the selection of varieties has to receive attention. Those which are excellent this year may be worthless in a year or two. Then, the

kind which is suitable for one locality may be useless for another, and so on, any number of difficulties that must be met might be mentioned.

Not only is this the case in regard to the strawberry, but any one of the fruits or vegetables which the gardener produces, or of the flowers which the floriculturist cultivates, is beset by a multitude of evils.

He who can devise a method for overcoming any of these obstacles is doing good service, not only to the present generation but to those which are to come. Especially is this true when one discovers a fact concerning a long-existing difficulty.

Much is yet to be accomplished by horticultural societies. While in a state blessed with such a fertile soil as this, and where showers are so frequent that there is little need of irrigation, so many still deny themselves the blessing of even a moderately cultivated garden, that there is need for all their enthusiasm.

Warner thought of frames for his pea vines through which he could send an electric current, and thus destroy the birds which made such sad havoc with his peas.

It were well if the electricity of enlightenment might be infused into the brains, and ambition into the frames of those who, from year to year, deprive themselves of the necessities of the garden, say nothing of the luxuries.

Mark Twain, in humorously introducing General Hawley to an audience at Elmira, said that he was able to judge of his character because they owned adjoining gardens.

Doubtless many a small boy would likewise be able to judge of some of the characteristics of his neighbor from his acquaintance with his fruit garden.

But there is a higher sense in which the work of the horticulturist is to be regarded. There are other compensations for his labor than simply the pecuniary. A flower garden sends forth a refining and elevating influence upon every passer-by, including alike the rich, the weary laborer, and even the desolate tramp. It is a great public benefaction.

O. W. Barnard, chairman of Finance Committee, reported for enrollment as members: John S. Blackstone, F. W. Mann, P. Durham, Charles Moore, Charles Eggleston, W. F. Gougar, H. Mortimer, L. W. Howes, P. Winslow, A. Snyder, W. H. Knox, E. Powell, Frank McGrew, Geo. Gridley, B. F. Brady, G. G. Barber, Sam'l B. McGrew, C. A. Swannell, Magruder & Dawson, L. E. Paquin, Miss O. H. Dickinson, Enyart, Son & Co., C. F. Keatly, John M. Stamm, H. B. Sherman, D. I. Babcock, J. S. Whitam, W. S. Halsey, John B. Worrall, W. R. Breckenridge, E. B. Warriner, A. E. Lasnier, W. L. Sherman,

A. D. Ehrich, I. Vanderwater, V. Stamm, G. Babel, A. Ames, H. Loring, C. E. Voss, J. Gelmo, A. H. Pike, John G. Knecht, R. J. Hanna, Brayton & Christian, J. J. Schubert.

Ladies whose husbands are members are also members.

The Awarding Committee on Flowers, H. S. Bloom, Mrs. W. S. Hawker and Mrs. H. Mortimer, reported the following:

PREMIUMS ON FLOWERS.

Best and largest collection of ever-blooming roses — 1st: A. H. Burt. Best and largest collection of June roses — 1st premium: Mrs. Mary J. Barnard. Best bouquet — 1st premium: Miss Susie Small: second best bouquet — Mrs. G. Decker. Best collection of pansies — 1st premium: Mrs. Jane Barnard.

REPORT OF STRAWBERRY AWARDING COMMITTEE.

Your committee to whom was assigned the duty of examining fruit on exhibition and awarding premiums, report that they found on the table thirty-six entries of strawberries of varieties correctly named, consisting of five lots or collections, and make the following awards: First premium for greatest and best display, ten varieties, L. E. Cunningham. Second premium for greatest and best display, seven varieties, Milo Barnard. The committee would here state that President Barnard had in addition to the seven varieties, a mixed lot of five or six varieties which would have entitled him, had these mixed berries been separated and labeled, to the first premium. Third premium for greatest and best display, six varieties, Hon. Harrison Loring. Best named variety of one quart, to Elias Powell, Sharpless. Second best named variety of one quart, to Elias Powell, Wilson. Third best named variety of one quart, to Milo Barnard, Chas. Downing. Best single quart of Wilson, W. H. Knox. Best single quart of Cumberland Triumph, Harrison Loring. Best single quart of Crescent, L. E. Cunningham. Some very fine berries of Bidwell and Photo, eminently worthy of a premium, were in H. Loring's collection, but as no premiums had been offered for these varieties, the committee could make no award.

MRS. F. N. TRACY,
MRS. ELLEN MANN,
A. L. SMALL,
Committee.

DISCUSSION ON STRAWBERRIES.

President Barnard said that he was becoming convinced that Crystal City is a better variety than he had first considered it.

L. E. Cunningham — From my experience I would recommend the Crescent as a most excellent berry. Of Bidwell, a new variety, I have young plants, set last spring, that I think will produce nearly a quart each. For a shipping berry the old Wilson is unsurpassed. I would discard President Lincoln, Duchess, Forest Rose, and also Chas. Downing, for it rusts badly.

The President — I agree with Cunningham in regard to Chas. Downing and Crescent.

The Secretary stated that he believed that the Crescent was getting more than its share of the praise from the speakers, and reminded them that the Sharpless had taken the first premium as the best berry on exhibition to-day.

The exhibition berries being now the property of the Society, steps were taken to dispose of them at auction. Capt. Bliss Sutherland was induced to mount the table and conduct the sale. The sale opened by knocking down the premium quart of Sharpless at one dollar to President Winslow, of the Agricultural Board, and proprietor of the Putney herd of short-horns of world-wide reputation. The berries all sold at good prices, the receipts of the day footing up about thirty dollars.

The President and Secretary drew orders for premiums and incidental expenses for June meeting, which will appear in Treasurer's report, amounting to about thirty dollars.

The thanks of the Society were extended to the host and hostess, Mr. and Mrs. Enos, to Prof. F. N. Tracy, to the Glee Club, to President Barnard and Vice-President Powell for their liberal donation of strawberries for the dinner table, to Mr. J. K. Eagle and the officers of the Agricultural Board for supplying lumber and seats, to Mr. Hall for use of organ, and especially to the ladies of the Society, who served the dinner in so pleasing and hospitable a manner.

AUGUST MEETING.

Through the courtesy of the Salina Grange, the Horticulturists met for their August picnic and business meeting at Grange Hall, Salina, August 11, 1883. Especial care had been taken to render the grounds neat and pleasant, while the interior of the building was tastefully arranged with flowers and the fine fruit on exhibition.

The attendance was exceedingly good, and the meeting unusually interesting.

At one o'clock nearly all had assembled, and were ready to enjoy the tempting viands invitingly displayed upon tables of generous dimensions.

At 2:30 P. M. the meeting was called to order, President Milo Barnard in the chair. After distribution of the printed proceedings of the previous meeting, the Standing and Special Committees were called on and the following reports submitted:

FINANCE.

O. W. Barnard, chairman, reported that Messrs. Wm. S. Hawker, Peter Gray, R. H. Hawker, I. B. Dole, J. M. Gridley, F. C. Eggleston, Chas. E. Ross, R. McGregor, L. P. Henry, R. A. Lane, I. Henkle, J. E. Shreffler, T. Stroud, Benj. Hammond and Peter Rathman, had paid their membership fees at this meeting, and their names were accordingly enrolled as members.

FRUITS.

A. L. Small, chairman, reported: Your committee find upon the table fine specimens of a dozen or more varieties of early apples.

R. A. Lane contributed specimens of Early Harvest, Sops of Wine, Keswick Codlin, Cooper's Early White, Red Astrachan and Early Strawberry.

Vice-President Powell, Red June, Duchess of Oldenburg and other varieties.

Mr. Alphonso Mellon, in addition to these other varieties named, brought specimens of Summer Queen, etc.

All of these three collections we find magnificent specimens.

We also find upon the table handsome specimens of Victor No. 6 and White Star potatoes, contributed by T. Stroud.

VEGETABLES.

L. E. CUNNINGHAM, COMMITTEE.

Mr. President:

The success and material life of a horticultural association depends entirely upon the regular attendance and active interest taken by each and all of its members.

The reports of committees I regard as essential and always looked for, but, sorry to say, excuses are more plentiful than reports. This should not be, and I hope that in the future, if we accept a position upon a committee, we will feel that we are under obligations to see that a paper is forthcoming at every meeting.

Early and medium early potatoes will yield the largest and best crop for many years. The late varieties with us will be very much injured by the bugs, much worse than usual at this time of the year. The early cabbage was a fine crop; late will be very good if some rain comes in season. The tomtatoes with me will be a large yield. Beets and parsnips will be good, and indeed I may say that the yield of all vegetables are and will be above average years. The grape crop with me promises better than for several years past. Blackberries were injured by the severity of the winter; many canes of the Snyder did not carry the fruit to maturity; the Black-cap raspberry did not give us the fruit that we expected. One cause, and the prominent one, too, robins. Thought I would experiment a little to see if I could get a partial share of my own fruit — hired a cheap boy with a shot-gun — set him to work. Situation — boy at one end of the patch, robins at the other end. Result at the end of the season — robins got half, boy got the other half, and I got what was left. After this I went into the resolution business as a committee of the whole, resolving that if there was lead and powder enough in Kankakee there wouldn't be a robin breathing, living or having its being on my premises next berry time. Good strawberry sets will be scarce unless we get rain soon — but enough for this time.

Mrs. Mary J. Barnard — I am really glad that the boy got the other half. Any member of our Society that will set a boy with a gun to shoot the birds, had ought to lose all of his fruit.

This led to a spirited discussion, Messrs. Lane, Cunningham, Stroud and Knox expressed the opinion that although the birds may

be very nice in their place, they are a nuisance to the fruit grower: while Messrs. Miner, Mellon and others thought we can better afford to raise enough fruit for both ourselves and the birds than we can do without them.

VINEYARDS.

P. A. Bonvallet, committee:

Grapes are coloring — Oporto, Ives, and Hartfords. We have an extra show in some corners, and if nothing wrong comes, we call this a good season. Am busy with a large correspondence all over the United States about the Oporto grape, and beating some old doctors. Have three extra-promising Concord seedlings. Will tell you this winter new notions, but too busy for the present.

By request the President then read the following paper which he had prepared for the Society:

WHY ARE APPLE TREES SO SHORT-LIVED IN THE WEST?

BY MILO BARNARD.

This question came up for discussion at a former meeting of our Society, but owing to the immense breadth and depth of the subject no satisfactory conclusion was arrived at. This is not to be wondered at when we reflect that the most learned, scientific and practical minds of the age cannot settle the complex problem.

One man attributes it to one cause, and another to something else. Even here the doctors cannot agree, and I should be foolish indeed were I to think I could solve or settle this, the most important question, perhaps, that the western horticulturist has to deal with, which will require years of scientific research and patient experiment to fully elucidate, and my only hope is that I may offer theories or make suggestions that will set others to thinking and searching into the secrets of nature, to expose the fallacy of my reasoning, perhaps, if they serve no other purpose; for the first step toward true knowledge is to unlearn what we have learned amiss.

The wording of this question presupposes the longevity of the apple tree to be greater in other localities than it is at the west, and in discussing the matter members generally held to the idea that down east, and in many localities far north of us, the apple tree lived and produced profitably for from fifty to one hundred years. But this knowledge (with me at least) being only hearsay knowledge, and wishing confirmation of its truthfulness, I addressed notes of inquiry to some of the leading horticulturists and fruit-growers of

eastern states, asking how many years their apple orchards remained healthy and in good bearing condition, and why our trees in the west died so young.

In reply to my inquiry John A. Warder says: "You have, indeed asked a hard question, and one which involves several answers, or a complicated one. There have been many answers offered, some of which are unsatisfactory, root-grafting especially so.

"The eastern states have suffered in the same way, but to a less extent, and the exceptional trees are the ones you have heard about. Many of them, too, are accidental seedlings — seedlings that have run back to the sturdy, hardy character of the native original crab type of the first wild apple. The Canadian apples were from French seed, and like their sturdy race of horses, may have been improved in hardiness by the killing off (naturally) of all the weaklings, and by the 'survival of the fittest' to withstand the rigors of the climate.

"We pomologists, with our refined taste and commercial ideas, have selected only those 'fittest' for our object of having choice table fruit, regardless of sturdy trees, which do not always go together, or of having trees that bear abundantly and are over-productive and which are early bearers, both of which qualities being adverse to thrifty and often to hardy tree growth, at least liable to be in opposition to such growth though not always so. Climate also has much to do in the matter. The prairie country especially is often very trying to perennial vegetation, in its drying winds and in sudden changes. The wind-break is there essential as a means of protection: The soil has been blamed, but though some soils are better for trees than others, and we even select certain soils as best for certain *varieties* of apples, all our blessed land has in it the necessary elements of growth. The old orchards seldom reach fifty years hore, and are then decimated, and the trees diseased and unproductive, as a rule, though there are exceptions. I have trees set twenty and twenty-five years, that have never yet borne me a fair crop, but they will now produce abundantly for the next twenty years, and some perhaps still longer. Close planting is your salvation in the prairie country if you thin out as the space is needed, but cover the ground."

From Thomas Meehan I received the following reply through the *Gardener's Monthly:* "There is little doubt that the average life of an apple tree in Pennsylvania is about fifty years. The length of life in any tree depends on its vital power. The English oak, in England, has an average of five hundred years. In America its average age, so far as the few instances known will allow us to judge, is about one hundred. The apple, we believe, has about the same comparative duration in the two countries. Anything that affects the vital power of a plant, effects its longevity. A tree that has to struggle with high winds and a low temperature, will not live

near as long as the same kind of tree protected from these trying circumstances. In like manner one subjected to very dry or very wet influences, or anything that is not the most favorable to vegetation, will not live as long as one which has everything favorable about it. Thus we see that all the hypotheses named by our correspondent may have an influence so far as they bear on this question of vital power, climate, soil and management—all relate to the question. We could make trees live as long in Illinois as anywhere else, but it would probably be at the expense of something we prize. What we call culture is opposed to abstract laws of health in plants. We want something which nature unaided will not give us, and she insists that if we will have it, it shall be at the expense of something else. It may be we have the best of it, even with a shortened longevity. This is practical as against the abstract question."

Ellwanger and Barry answer in this wise: "The reason why apple orchards on prairie soil at the west are short-lived is that they grow fast and do not ripen their wood well. The consequence is injury in winter, and this, followed up year after year, destroys vitality, the center is all black and dead with a living shell outside, which a hard winter kills. In the eastern states where the apple tree is long-lived, the soil and climate are very different from yours. All you can do is to select hardy sorts and plant on dry land. There are orchards more than fifty years, yes eighty to one hundred years old, in good condition in this country."

I think this settles the question, fairly at least, touching the comparative longevity of apple trees in the different localities of our country, and the lease of life seems to increase the further we go east—much longer in Ohio than here, and in Pennsylvania still a little longer, but only in York State do they reach the good old age of one hundred years.

Now, in presenting a few thoughts on this subject, allow me to say that the apple we are now talking about is not indigenous to the western hemisphere, but is a native of Southern Europe and, perhaps, Western Asia, and such is the botanical difference between this and our native crab that they will not mix or hybridize, though they will grow when grafted on each other. So we see our apple is foreign-born, but has become naturalized and seems well suited with certain localities in its new home. But to expect it to flourish, wax old, and remain hale and hearty in all the trying situations in our western country, is more than even apple nature can submit to. I think Meehan strikes the central truth in this matter when he says: "What we call culture is usually opposed to abstract laws of health in plants." The word culture, as he uses it, means change, and when we improve the quality of a fruit, we usually impair its vital power in some way, either make it tender, short-lived, or reduce its bearing qualities, for it seems each tree or plant is endowed with a certain amount of vital force or power, and in certain kinds there

is a tendency to change which man has taken advantage of to produce fruits of finest quality, and flowers of rich and most gorgeous beauty. But as Meehan again says: "If we will have these qualities, nature says it *shall* be at the expense of something else." So we will have to submit to this inexorable law of Mother Nature, and renew our orchards every twenty years, or content ourselves with poorer fruit. If we could improve our native crab-apple we might succeed better, but unfortunately it belongs to that class of plants that show little or no disposition to improve in any way. And it is said by those best qualified to know, that there is no well authenticated case of its pollen fertilizing our common or cultivated apple, or *vice versa*. And still we are not sure that improvement of the fruit of our native crab-apple (were it possible), would not lower its vital forces, and cause it to succumb to our trying seasons, for according to this well-established physiological law controlling plant life, to improve or strengthen it in one direction must necessarily weaken it somewhere else, and as hardiness seems to be deficient in so many of our improved fruits, an improved native crab-tree would in all probability be open to the same objection. But some may ask why varieties that are hardy further north and in colder climates than this will do little or no good here. I will say because we lack the protection and drainage, and will add, we have commenced fruit-growing on the western prairies under the worst combination of circumstances that will, or ever can exist, while they at the east or in timbered regions commenced under the most favorable circumstances that will ever be vouchsafed to the planters.

Our prairies are getting better year by year for fruit growing as we drain and plant timber, while the once timbered localities are lessening their fruit-growing capacities year by year by the destruction of their forests. Viewing the matter in this light, is it any wonder that a tree that has been cultivated and pampered until its fruit has attained to such excellent quality, is unable to withstand the trying ordeal of our undrained, treeless prairies? Why, go a little further west on to the plains and our hardy forest trees cannot be grown without the aid and protection of nurse-trees, as they are called, and they use cottonwood and other native trees that are to the manor born for the purpose. Then let us learn wisdom by observation, that we may plant wisely and well, both for fruit, shelter, and timber, in nowise forgetting that to grow apple trees that will meet our wishes in the measure of longevity and hardiness, we must grow them for ourselves, must go back to first principles and grow from seed, and must content ourselves with fruit of lower grade, as to quality, than that grown on the banks of the Hudson, or along the eastern shore of Lake Michigan.

Discussion on this paper was deferred until next meeting.

Discussion of the question

HOW SHALL WE KEEP OUR BOYS ON THE FARM?

was opened by R. A. Lane:

The question: "How shall we prevent our boys from leaving the farm?" is rather indefinitely stated, and I do not know whether it refers alone to the big boys or whether the little fellows should be included; if the latter, the question might be safely left to the mothers. If information is desired in regard to "Young America," those who are neither children or young men, large doses of patience should be prescribed to be taken daily by the parents while they give the boys allopathic doses of kindness, and, when necessary, wholesome correction. If the inquiry be made concerning our sons who by law are the owners of their own time, and the arbiters of their own destiny, I apprehend that as true parents we do not wish to keep them at home unless we are confident we could do better for them than they could do for themselves, and while the departure of our sons and daughters from the old farm and home, and the breaking thereby of the ties which have bound the family, will cause many an hour of sadness, many a tear to dim the eye, and perchance bring to us a feeling of loneliness, and a sense of sorrow akin to those we experience when loved ones pay the great debt of nature, yet while our hearts are ever filled with affection for our children, and while, if possible, we would have them ever with us, yet as they go out into the broad world to contend for their rights, to build up their fortunes, we should let them go — yes, *send them* forth with cheerful words and choicest blessings. Study and plan as we may to keep our boys at home and to make farmers of them, we shall often fail, and it is but right that we should, as long as there are avocations and callings in life more congenial to their natures and in more perfect harmony with their ambitious aspirations. But fathers and mothers, if you cannot keep your sons and daughters on the farm or at home always, and if you would keep them there as long as possible, this is my advice: make home HOME — make it to your family the fairest, happiest place on earth. Make your children feel that for them and their good there is no anxiety so great as yours, *no affection* so strong and enduring, *no love*, that in its breadth and in its depth or its purity, can excel a parent's affection and love of his offspring, and when separation does come, they will carry out with them the memories and recollections of the old home that will be ever present joys, rising up to cheer them even in the darkest, loneliest hours; nor will they be forgotten even though the full fruition of young ambition's highest hopes be more than realized, for they will be able to adopt the language of the poet even then, and sing "home, sweet home, there is no place like home." And the pleasant recollections of a happy home will not stop here, but like good precepts and good

examples, will bear fruit fragrant with happiness and rich with blessings, by laying the foundations of other homes, rivaling, if possible, the dear old home. Then I say, for these reasons, and as the best answer that I can give to the question, make home a place of happiness, a place of cheerfulness, a place of love and kindness, and in the memories of your children, through all their lives, it will be the *sweetest* place under heaven's dome — the *brightest* place beneath the stars.

The discussion was continued for nearly an hour and was participated in by Messrs. W. S. Hawker, R. H. Hawker, O. W. Barnard, Mellon, Miner, Stroud, Beedy, Mrs. Mann, and others, who expressed varied opinions. Many of the speeches were very interesting and highly deserving of publication, being entirely free from the monotony which is apt to characterize the remarks at a horticultural meeting, but not having been reduced to writing could not be inserted.

MISCELLANEOUS.

R. A. Lane moved that Dr. A. L. Small be appointed a delegate to the Nineteenth Session of the American Pomological Society to be held in Philadelphia during September. Carried.

Some discussion was had in regard to the Society making a horticultural display at the coming County Fair, and on motion of Dr. A. L. Small, R. A. Lane was appointed agent for the Society to take charge of and exhibit horticultural products.

Richard H. Hawker, on behalf of the Bonfield Driving Park Association, invited the Society to hold a meeting in the Driving Park Hall.

Len. Small moved that the invitation be accepted, and that the thanks of the Society be extended to the Park Association. Carried.

Among those who contributed to the large and beautiful display of cut flowers, were Mrs. Powell, Mrs. Mary J. Barnard, Mrs. Henry, Miss Edith Hawker, Miss Gertie DeLamartre, Mrs. Lane, Mrs. Schreffler, Mrs. Ross, and Mrs. I. Dole.

The Society is under obligation to Messrs. A. B. and L. P. Henry for accommodating the teams of members.

SEPTEMBER MEETING.

The Society met in Murphy Hall in Monence, Sept. 8th, 1883. The display of fruits, flowers and vegetables was large and of superior quality.

At twelve o'clock dinner was announced as ready, and after relieving the tables of a portion of their delicious burden the members assembled in the main hall, where the meeting was called to order by President Milo Barnard.

The printed proceedings of the last meeting were distributed among the members.

Considerable discussion was had in regard to the advisability of our Society making a display of fruit at the coming State Fair.

On motion of S. A. Randall it was decided, "that it is the sense of this meeting that it is advisable for our Society to make an exhibition at the next State Fair." It was thought best to postpone making definite arrangements until the County Fair, when a special meeting will be held for that purpose in the horticultural hall on the fair grounds.

On motion of the Secretary Milo Barnard was appointed a committee to report on the horticultural products exhibited at this meeting.

The following reports were submitted:

FINANCE.

Mrs. M. J. Barnard, treasurer, reported that T. C. Dickinson, L. T. Dickinson, A. S. Vail, S. A. Randall, and M. J. Chipman had paid their membership fees during this month.

HORTICULTURAL PRODUCTS EXHIBITED.

Milo Barnard, committee, reported:

Your committee find upon the tables handsome bouquets of cut flowers contributed by Mrs. M. J. Barnard, Miss Ida Moore, and Mrs. A. L. Miner. Twenty varieties of apples by A. S. Vail, including specimens of Alexander, Keswick Codlin, Northern Spy, Baldwin and Black Pippin. Sixteen varieties by A. L. Miner, including Low-

ell, Maiden's Blush, and Belmont. Milo Barnard exhibits specimens of Cole's Quince, Yellow Ingestre, and Raindel. Sixteen varieties of apples by S. A. Randall, including Bailey Sweet, Savannah, Rhode Island Greening, and Fall Pippin. Mr. Randall also exhibits a specimen of South American Pampas grass, ten feet in height, also some very fine White Elephant potatoes, one of which weighs twenty-three ounces. Many of the apples in the collections are very fine.

The President called for J. L. Clark, essayist, who, owing to a business engagement, was unable to be present, but had sent his essay, which was read by his daughter, Miss Mary Clark.

FARMERS, THEIR POSITION SOCIALLY AND POLITICALLY.

BY J. L. CLARK.

That a far greater share of our population is represented by agriculture than by any other branch of industry is proven by the census reports; that the general habits of the tillers of the soil are better, more conducive to a higher standard of morality, than any other class, is too well an accepted fact to need any argument to sustain; that the physical health and developement is fully equal to that of any other calling, also needs no argument to uphold. But that by a great majority of the young people farming is not looked upon as a desirable occupation, is too well attested by the overcrowding of the professions and the departments of clerkship, the eagerness with which girls choose husbands from the ranks of almost all other pursuits, of the thousand and one little things that are every day flung athwart the pathway of all.

It would seem that if the intellectual development were equal to that of the other classes, that farmers must, in a country where caste is ignored, and where no lord nor prince nor potentate has the prerogative to dole out at his will social honors or political preferments, by virtue of equal physical force, equal intellectual strength, a better morality, and a greater weight of numbers, rise to the top, both socially and politically. And the argument has often been used with seeming force to prove the intellectual inferiority of the average farmer. Still I cannot accept the argument. For that sturdy practical common sense which builds empires and sustains them, all countries have been obliged to draw upon the honest yeomanry, and every draft has been honored when trials have come that have made the heads of wisest statesman and titled lord low in despair, oftimes the plebian has stepped forward to the rescue.

On what, then, is this charge of inferiority based?

Let me try and answer. There are among us, as there are among every other class, a lot of blatherskites, whose mouths are always open, whose pens are ever ready, whose sense was never dis-

covered, who proclaim themselves to be the representative men, and farmers, unlike almost every other class, not only fail to denounce them as frauds, but by their silence give tacit consent, and the people at large often misjudge them and their opinions in consequence.

Farmers, for the lack of that peculiar discipline which trade and the professions enforce, have more of the mercurial temperament than almost any other class. In other callings reverses and successes come and go and make no sign; a rigid reticence in all their matters, guarded expression and carefulness of action, are all assidnously cultivated. But this is not the case with the average farmer. His loss or his gain can be read upon his face. He is at times all depressed, all elated. The same temperament is carried into his political and his social life. He is apt to go to one extreme, then to the other, then again (and that by far the greater part of the time) take the safer wiser path, the middle road. Others read the record of such men as they read the mercury in the thermometer. The few days marking the extremes of heat and cold are carefully noted, and often told; while the many days for business and pleasure are never mentioned.

In Longfellow's prayer, "Let us learn to labor and to wait," a great truth is implied, which farmers, more than others, have failed to learn. They are too impatient — too unwilling to wait.

A student starts out to predict an eclipse of the sun. He first studies the different motions, speeds and courses of the heavenly bodies, finding first one factor then another, bearing on that still another contingent, upon that still another and another, and knowing that he cannot ignore or dodge one of them, begins arranging factor after factor, patiently traces his way through the long labyrinth of the abtruse analysis, waiting and willing to wait for the end, and when he does reach the solution he knows he is right. The farmer is more apt to say "we had an eclipse last year," and rather than wait to trace altered conditions of the problem, conclude at once that we will have an eclipse the same time this year, and nearly every body else will know he is wrong. In nearly all of the political and social questions of the day farmers have too often in this way jumped at conclusions, and have suffered in reputation thereby.

Again, we farmers are too apt to fire our arguments through smooth bore guns, which scatter altogether too much to bring down much game. Other classes have been wiser in firing a concentrated shot at a single grievance, and when that is despatched take another, instead of trying to bring down a whole legion at one shot

Having thus kindly pointed out some of the causes of the reproach resting upon us, let me turn to the pleasanter task of pointing out remedies. Let us try and make our homes pleasant: do in the house what we are so eager to do on the farm, introduce all the labor-saving machinery we can, relieving as far as we can, our wives and daughters from the drudgery of the kitchen; hire, when you can,

married men, build houses for them to live in, and let them board at home, then, instead of ostracising them, visit with them, and let them know that we ourselves do not feel that their occupation is one whit lower or more degrading than that of any other calling.

Let us give our children all the culture we can, and encourage others to do the same; teach them that the genuine lady is not represented by the flamsy-pamsy-lifeless "belle of the period,"—I shook hands with one the other day, and I waited breathlessly for a minute or two for her to speak or breath to satisfy myself that she was not a corpse—but by her whose kindliness of heart dictates her actions, whose purity of purpose is unquestioned, the touch of whose hand betrays life, strength and self-reliance; that manhood is not embodied in that despicable biped, a dude, but in him whose restless energy and indomitable purpose is employed in lifting up humanity and lessening its woes. Never fear but that the inherent force of that true dignity of character which such manhood, such womanhood implies, will place the possessor upon the highest round of the social ladder. And, if in the past we have been negligent in in this matter, let us remember that such an education cannot be obtained in a day, and though never abating one effort, wait patiently, for wait we must, till the end is attained.

Before we complain of a political grievance let us know we have a grievance, be able to clearly show it and plainly point out the remedy, and I have no fears when this is done about its removal. The statesman pays no heed to hair-brained crochets or chronic growling, but when any question is clearly, ably presented, he always wishes to enroll himself on the side of right; if a demagogue is occupying the place of a statesman he would, under such circumstances, stand in a greater fear of the farmers than he ever did of the "wrath of God," for farmers' votes are to the demagogue a little more omnipotent than Omnipotence Himself.

Before we proclaim our opinions upon great political questions let us be sure we have opinions and some grounds to safely base them upon; let us treat every political question with that same care and thoughtfulness which our traducers have in times past accredited to us, when great emergencies have arisen, and we have settled them at the ballot-box. Let us by much reading, close observation, by careful thought, acquire convictions and then have the courage to maintain them, and, party or no party, vote for them, abiding with them, through weal, through woe, through good report, through evil report. To do so we must at times be unpopular; our motives will be impugned, obloquy thrust in our face, reproach heaped upon us, and we must patiently bear it. And though perhaps not in the very far distant "bye and bye," when it shall have been demonstrated whether or not we were wrong, a just public may retract the slur upon the motive which impelled us, yet, in case we err, the obloquy and reproach will remain, changed only to the old familiar word "foolish-

ness," while if we are right, not one stain or imputation remains. How important to be sure we are right.

Let us guard against too much legislation. It is the bane of the country. Sometimes I think we act as if we want to legislate a man to death, resurrect him by legislation, and legislate for the eternal life beyond. Now I think we had better, at least, leave the last alone until we know definitely where the state lines in that unknown country are, and to what state the man is going. But let us, when a law is proven to be useless, urge its banishment from the statute books; learn the simple needs of the body politic, and by so qualifying ourselves that we can show a masterly ability to frame simple laws to provide for those needs, I have no fears of our not reaching the higher rounds of the political ladder.

DISCUSSION

of the question, "Why are apple trees so short-lived in the west?"

A. S. Vail — When Mr. Beedy and myself first came to this country we planted orchards. In from ten to twenty years they began dying. In digging up the dead trees to replant we found that the bottom or tap roots were all rotten. We supposed that it was caused by the roots running down into the water. To correct this we put in a big flat stone in the bottom of the hole before planting in the young tree. Trees planted in this way twenty-five years ago are still nice and thrifty. Our soil is deep and rich. Since we planted those trees with stones underneath, my son planted an orchard without putting stones under his trees, and they are nearly all dead.

Milo Barnard read short extracts from the printed opinions of some eastern gentlemen on the subject.

A. S. Randall — Our land is too wet. This prairie soil of ours needs tile draining for orchards.

A. L. Miller — I notice that orchards set on the highest knobs, well drained, are doing well. I think root-grafting is one thing that ails our orchards. I believe that the whole root should be used instead of a piece of a root, as is customary.

Mr. Miner also spoke in favor of budding seedlings.

A. Mellon — I do not agree with Mr. Miner in regard to root-grafting; my top-grafted trees break down badly. I have come to the conclusion that root-grafting is the best. I have one Wild Goose

plum tree that has borne well for several years. I would like to have each member of this society get one tree of the Wild Goose plum and try it. I have one orchard that was planted on very dry ground on the banks of the Iroquis River thirty years ago, and the trees are nearly all dead. Another orchard of mine growing on pretty wet land is doing well. Mr. Mellon spoke disparagingly about protecting orchards by wind-breaks, and added: If I had my choice of location I would plant on the highest knoll of the prairie.

Mr. Beedy — I think we should know more about geology; some varieties do well in one locality that will not succeed in other places owing to the difference in the soil. We need to study geology.

Mr. Smith was called on — he said: have an orchard planted on ground formerly occupied by timber, and one on prairie soil, can see no particular difference in their growth. My experience is that a man who takes the best care of his orchards has the best trees.

President Barnard — I cannot agree with Brother Miner in regard to root-grafting. A number of years ago I planted fifty root-grafted trees; the next spring I procured and planted next to them fifty seedlings which were afterwards budded. I find now that fourteen of the latter and thirteen of the root-grafted are dead, this together with other experience, leads me to believe that root-grafting is preferable.

On motion adjourned.

SPECIAL MEETING.

At 11 o'clock A. M., Friday, September 14, a number of the horticulturists assembled in Horticultural Hall, on the fair grounds, in Kankakee.

In the absence of the President and Vice-President the meeting was called to order by the Secretary. On motion of H. S. Bloom, O. W. Barnard was elected President.

Mr. Bloom stated that the meeting was called for the purpose of the further consideration of the project of the Society making an exhibition of fruit at the State Fair.

G. G. Barber — I move that the matter be dropped.

R. A. Lane — I second the motion.

It was put to vote and carried unanimously. On motion the meeting adjourned.

OCTOBER MEETING.

Notwithstanding the 13th of October was a cold, disagreeable day, and a drizzling rain continued to fall at frequent intervals, quite a number of prominent horticulturists assembled at the handsome residence of Wm. Cooper, located two miles northwest of the village of Bourbonnais, on one of the finest and best cultivated farms in Kankakee county.

At a few minutes past twelve dinner was announced and heartily partaken of, it being excellently served by Mrs. Cooper and other lady members of the Society.

After dinner the meeting was called to order by first Vice President Elias Powell. Len. Small, one of the committee appointed to revise the constitution and by-laws, submitted a partial report. After some discussion, on motion of W. Cooper the whole matter was laid over until the November meeting.

Finance Committee, O. W. Barnard, chairman, reported that Major C. Williams and Slocum Wilber had paid their membership fees, and that our Society was awarded the premium of $25 at the fair last month of the County Agricultural Board, for the best collection of horticultural products exhibited by any society.

Wm. Cooper was called upon, and asked how the apple crop had been. He responded that the apple crop with him had been rather light during the post season. He enumerated some varieties that are doing well, while others that are considered standard are doing nothing. Mr. Cooper said: "In coming home from the west we rode through Missouri and Iowa in the daytime. I noticed that very few of the orchards looked well; in some of them two-thirds of the trees were dead. The trees in Kansas are beginning to show their age."

A. L. Miner—In traveling for a few weeks past a little north of here, I observed that the orchards planted on high lands are thrifty and looking finely.

Major C. Williams told of trees set on sandy soil that had done well. Milam apples have been short lived with him.

A. H. Gaston, of Lacon, being present, was called upon, and said: I am here more for the purpose of learning than for talking. The crop of apples with us is not as great as it is here. Last winter the thermometer fell to 34° below zero, which gave an opportunity of testing the hardiness of varieties. Some of those that went through all right were the Duchess of Oldenburgh, Snow, and Bellflower. We make the Bellflower bear by girdling. Lacon has a gravel underdrain. High bluffs are considered the best for orchards.

MISCELLANEOUS.

On motion of G. G. Barber the bill for printing the August and September proceedings, and the bill of the County Agricultural Board for the Society's membership were allowed, and orders drawn for the amounts. After some further discussion on orchards and grafting the meeting adjourned to give the visitors an opportunity to look over the extensive farm and orchards of the host.

HORTICULTURAL PRODUCTS EXHIBITED.

Handsome bouquets of flowers were exhibited by Mrs. Elias Powell, Mrs. M. J. Barnard, and others. Some fine specimens of apples by Mr. Cooper and Vice President Powell, the latter also exhibited some fine mammoth Kansas corn and turnips, one of which weighed four pounds. A. H. Gaston, of Lacon, exhibited some fine seedlings of Catalpa Speciosa and Russian Mulberry, both of which deserve to be placed near the head of the list of hardy and durable timber trees.

NOVEMBER MEETING.

The Horticulturists met for their regular monthly meeting on Saturday afternoon, November 10th, in the Supervisor's room, Kankakee, President Milo Barnard in the chair.

Minutes of the last meeting read and approved.

On motion of Dr. A. L. Small the order of business was changed so that the essay of Dr. A. S. Cutler would be first on the programme. Owing to a business engagement the Doctor was unable to attend the meeting, but Mrs. Cutler was present and kindly read his essay, which was entitled:

SOMETHING ABOUT OUR PRAIRIES.

Mr. President, Ladies and Gentlemen:

While I am aware that the subject under consideration is not strictly a horticultural one, I yet consider it near enough to launch out upon the theme, and as many years have past since I was a practical horticulturist, I trust you will bear with me in my present brief departure from your established usage. I shall, in the present essay, have a little something to say of the origin and characterics of our prairies. By the term prairie, I mean that peculiar modification of highland or lowland plain so immediately characteristic of our western states, and of which those of our own great state seems to afford so perfect a type.

Plains, highland or lowland, are by no means confined to the great central portion of our own country. They occupy at least two-thirds of the land surface of our globe. But whether they are the steppes of Siberia, the sandy plains of Central Asia, the vast Sahara of Northern Africa, the table lands of Southern Africa, the llamas and pampas of South America, the frosty uplands stretching away from the northern border of our great lakes to the very margin of the Arctic sea, or the vast, illimitable prairies of our own great Mississippi Valley, one leading feature of them all remains the same. It is the complete or comparative absence af all arboreal vegetation, and their treeless character remains the same whether the plain be level or rolling and covered with desert sand, or the richest vegetable mould.

The great prairie region of our own country lies in the vast concavity of our continent drained by the Mississippi and tributaries, and lying between the great mountain ranges upon the east and west. The territory it occupies covers a portion of Western Ohio, a still larger portion of Indiana, takes the lion's share of our own state, and the entire whole of Iowa, Nebraska and Kansas. The most of this region is comparatively well watered, and the soil is of surprising fertility. It varies from a rich, black or chocolate colored vegetable mould, east of the Mississippi, to a greyish silicious loam west of the Missouri, until west of the 100th meridian west longitude it gradually becomes a seeming dry and parched desert plain. We use the word seeming advisedly, for what twenty-five years ago was considered a part of the great American desert, and so stated in

the geographies of that time, is now one of the fairest portions of the world's great garden and granery.

In the central part of our own great state I have seen the rich black soil from three to ten feet in depth — a wealth of Mother Earth calculated to sustain an enormous population for centuries to come, with but comparatively little need of recompense to be paid back on account of exhausting its fertility, and years ago the settlers of Grand Prairie had a glorious view spread out before them in the undulating plain almost as level as the bosom of a peaceful sea, the rank grass growing from five to even six or eight feet in height.

Much of the prairie lying west of us in our own State and the State of Iowa is of a nature we denominate "rolling," the undulations being commonly of a gentle nature and admirably adapted for drainage.

The streams watering these regions have their rise in slight depressions of the land, flowing over beds more clearly marked as they proceed upon their way. The general land elevation of the central Mississippi valley ranges from four hundred feet in the vicinity of Cairo, to upwards of twelve hundred feet in the states of Missouri and Iowa. The general elevation along the line of the Illinois Central Railroad in this state being from six hundred and fifty to seven hundred and fifty, and the elevation of Lake Michigan above tide water five hundred and seventy-eight feet.

A marked peculiarity of our prairie soil is its exceeding finely comminuted nature. To this circumstance many of our eminent geologists attribute its treeless character, while others explain the fact by the theory that, at no long time since in the earth's history, this entire region was covered by a vast system of interior lakes, of which those yet remaining upon our northern borders are a sort of type, and when we consider that beyond a doubt the former level of the great lakes must have been one hundred and fifty feet above their present surface, we realize more fully the vast extent of territory they must have covered. These evidences of a former high level of a wonderful inland sea are at once numerous and conclusive; the chiefest of which are the terraces lying adjacent to the southern shore of Lake Erie. They lie above the present level of the lake from fifty to one hundred feet, and passing around the western shore they are again found in the State of Michigan along the borders of Lake Huron, and they are again discoverable upon the island of Mackinac. They were doubtless formed by the waters remaining at nearly constant level for ages in duration, until the immense flood wore its way through some comparatively thin wall of partition when they sank to a lower level. The last great change in this direction was ages in the past, when the pent up waters burst the bonds that had hitherto restrained them, and the river and falls of Niagara were the result. This change, according to prominent geologists, reduced the former lake levels about forty feet, a distance, you will perceive,

amply sufficient, could the waters be again raised to that height, to flood this entire region and turn the current of the mighty stream diagonally across our state, and the evidences seem to exist that in former ages such was certainly the case, and from twenty to forty miles from the present shores of Lake Michigan upon the south are yet to be distinctly traced the ancient level of this mighty sea.

Now for some of the various hypotheses to explain the treeless character of our prairies. One has already been alluded to— the finely pulverized condition of the soil, which is supposed by many to be inimical to native forest growth. Another is, that all prairie regions being former sea bottoms, no tree growth can ever spring spontaneously from an ocean bed, as water itself is entirely destructive to the germs of tree life. Another popular view that gained an almost universal credence, was the fact that our prairies were annually burned over by the Indians in search of game or to harrass their enemies, and the illogical sequence was at once jumped at that the red man was the destroyer of all previous tree growth. Still another view that obtained to some extent was, that the prairies had formerly been covered by timber thickly intermixed by rank-growing cane, the latter taking both moisture and nutrition from the trees, and literally choking out their existence, while in turn the cane brakes, deprived of the shade of the timber, perished by heat and drouth. Still others refer the treelessness of our prairies to certain other conditions unfavorable to their development or growth, as dryness, or saltiness, or alkalinity.

Prof. Lesquereaux, in speaking of prairie soil, says: "It is neither peat nor humus, but a soft black mould containg a large percentage of ulmic acid, produced by the slow decomposition of aquatic plants, mostly under water, and partaking as much of the nature of peat as humus," and he continues, "it is easy to understand why trees cannot grow on this kind of soil. The germination of seeds of the arborescent plants need the free access of oxygen for their development, and especially young trees absorb by their roots a great amount of air."

I am inclined to think that for the germination of timber-growing seeds there should be a thorough breaking up of the tough, wiry prairie sod, to allow a free admixture of atmospheric air immediately underneath, then prairie soil becomes the fitting home for future forest growth, provided the still further artificial methods of planting be resorted to. But perhaps some one asks: "How do you account for the groves that at various intervals stud the bosom of our fertile plains? Who planted or transplanted the forest growth we already behold, much of which has sprung up since the departure of the Indian for his western hunting grounds, or which before existed in spite of his destructive fires?" I reply that we find all such timber growth upon a soil essentially diverse from our true prairie mould. In many places in our own, and in several places in adjoining States,

I have frequently traced the clear and sharp cut lines of woodland, and observed the strong contrast it presented to the far-stretching prairie, until the line of timber in the distance looked like a solid wall. There is but little compromise between the two; the natural prairie will not encroach upon the woodland, nor does the forest of itself enlarge its borders at the expense of the plain. The acorns and nuts that fall upon the prairie margin decay and rot where they fall, unless the soil was specially prepared for their reception, while had the same germs been planted by the hand of nature on a true timber-bearing soil, they would of themselves have sprouted and taken root. The characteristics and differences between true timber and prairie land is as marked and distinct as that between mountain, slope, and meadow location.

Nor has the age of prairie formation even yet, by any means ceased to be; the sloughs and low marshy lands we find in almost any direction about us, is a condition, the last of a long series that have continued for long ages past, that transforms a sea bottom to a fertile plain. The bay of Sandusky, north of Ohio, is at present undergoing this same transformation. A portion becomes land-locked by sand bars and islands, and thus protected from the agitations of storms and deep waters, fresh water deposits are slowly but surely accumulating upon the bottom. These and the washings of the surrounding shores, and the debris of incoming streams, are an influence that makes itself felt in the course of centuries. Minnesota may be termed a land of inland lakes, yet it will not be many generations hence ere the majority of them will become cultivated fields. Beaver and Eagle lakes, in the border of an adjoining state, have, by a system of drainage, been largely reclaimed to cultivation within the past twenty years, and where formerly the lake bottom was found at a depth of twenty feet or more there is scarcely half that, while, by a general cultivation of the entire country, an increased evaporation is taking place, and swamps and marshes are yearly becoming firmer and more cultivatable. Near my former home is the old arm of a lake covering a thousand acres, that in a few years longer will bear the finest of tame grasses; within the memory of men still living it lay five feet under water. The marshes along the bed of the Kankakee River in the State of Indiana are slowly but surely becoming dry prairie, and when, two hundred years ago, LaSalle and his brave men followed the course of our river from some point in Indiana to its union with the Illinois, the marsh was both wider and deeper than at present.

It will be but a few generations hence when the monotone of prairie grandeur and its wild loneliness will have forever passed from our midst. The civilization of to-day is thickly dotting the fertile acres with prosperous homes. The great present and the still greater future granaries of the world lie within our borders. The cultivation of upland and the drainage of lowland plains and the million

homes an industrious people are building for themselves, renders a locality even in the course of a score of years scarcely recognizable. Timber will be planted in the future far more than in the past, not so much the soft fibred cottonwoods and poplars, but trees of hardy growth like the oak, the walnut and the maple. Groves, with the easy cultivation they require, will become far more abundant in the future, and the great prairies as they were known to the generation of pioneers now fast passing away, will soon become a thing of the past and its history.

At the conclusion of the essay the regular order of business was taken up, and on motion of Len. Small the Society resolved itself into a committee of the whole, with Wm. Cooper in the chair and H. S. Bloom as secretary, for the consideration of the revision of the constitution and by-laws. After one and a half hour's deliberations the committee arose, and the house was again called to order by President Barnard, and the committee's report, consisting of the revised constitution and by-laws, was read by Mr. Bloom, and on motion the same was unanimously adopted, with an additional amendment, fixing the annual meeting on the first Saturday in December.

Report of committee on vegetables was called for and submitted.

VEGETABLES.

Mr. President:

My report for the last two months may be summed up very briefly. Taking the county over the potato crop is no doubt the largest in the last eight years, and consequently very cheap. The late cabbage crop proved very light in the cabbage growing districts. The midsummer vegetables were fully up to the average. Strawberries, raspberries, grapes and cherries are evidently going into winter quarters in fine condition. L. E. CUNNINGHAM,

Committee.

An essay was then read on

THE POWER OF ORGANIZATION.

BY MISS HELEN N. PECK.

"In union there is strength," is a maxim, the truth of which has been demonstated in all ages. In every nation, so long as the people or the ruling party are united, the government stands; and just so soon as dissensions arise among themselves the nation or government falls.

The knowledge of this truth is what leads to the formation of the various "rings," "combinations" and "leagues" with which we are all familiar. And it is the knowledge of the strength of their union which makes them so daring in their schemes. The trades unions all over our country, though largely founded on false principles, are yet often able to accomplish their aims by their perfect organization. Even the thieves have their system, and surely, honest men may, and do follow their example in this respect.

Having noticed the benefits derived from organization in the way of executing plans, let us look at the benefits to be derived from the same source.

You will find some who sneer at those who are active in such an organization as this, calling them fanatics. But there has never been a reform or a great discovery in the world of science but what the pioneers in the movement were termed fanatics. For instance take the man whose natal day the whole civilized world are celebrating. So the term is one of honor rather than of reproach. But why is it more fanatical to meet and discuss the best methods for raising strawberries than to do the same with regard to school teaching?

"In union is strength," is as true of ideas as of anything else. In an association like this the interchange of ideas is of great benefit. Each one present can testify to the benefits received, though, perhaps no two of them have been helped by just the same thing. In this is shown the power for good of the Society as a Society. Perhaps the one who wished to know about potatoes might meet no where else the one who could give him the desired information, while thrown in daily contact with the great raspberry cultivator who could neither help his neighbor nor be helped by him. But here the experience of one can be made to do duty for all; and if each contributes his small item the total information will be great. The main question is, does each profit by the experience of others as much as he might? Let each then give his best thoughts, his most valuable information and his experience on the subject under discussion, knowing that others may be informed and saved from mistakes thereby.

But if organization is so important, will not a more thoroughly systematized organization accomplish more work, with less labor by the individual? Suppose each member of the association was to agree to make a certain experiment, or a series of experiments on a certain subject, then, when the results were compared, the information gained by each member would be in exact proportion to the number of members and the faithfulness with which each part was performed.

"No man liveth for himself alone," but perhaps the farmer and fruit-grower live for others more than any other portion of mankind; for what says the poet:

"We may live without poetry, music and art,
We may live without conscience and live without heart;
We may live without friends, we may live without books,
But civilized men cannot live without cooks.

He may live without books — what is knowledge but grieving?
He may live without hope — what is hope but deceiving?
He may live without love — what is passion but pining?
But where is the man that can live without dining?"

And who has more to do with the quantity and quality of the dinner than those who produce it? Then let the Society flourish, and with a good organization will come good dinners, and mankind will therefore be better tempered, and hence the community be better for it.

On motion the Society adjourned.

DECEMBER ANNUAL MEETING.

On December 1st, 1883, the Society held its annual meeting in the Circuit Court room, in Kankakee, with about fifty members in attendance. The meeting was called to order at half-past one, p.m., President Milo Barnard in the chair.

UNFINISHED BUSINESS.

That part of the constitution and by-laws postponed at the last meeting was first considered.

A. L. Miner moved that the regular meetings be held monthly. Several amendments, purposing to lessen the number of meetings, were offered to this motion, and considerable discussion followed. The amendments were finally voted down, and the original motion prevailed.

The Secretary's and Treasurer's reports were then read.

SECRETARY'S REPORT.

Mr. President, and Fellow-Members of the Kankakee Valley Horticultural Society:

It has become an established custom for secretaries of associations of this kind to make annual reports.

Realizing that the time for our deliberations this afternoon is very limited, I shall ask for but few moments in which to review our year's work and offer some suggestions. I congratulate you upon

the increasing interest in our Society's work. For some time past I have enjoyed special advantages for becoming acquainted with the inside working of horticultural societies, and it is with a feeling of satisfaction that I realize that the Kankakee Valley Horticultural Society stands second to none in the great state of Illinois. During the past year there has been enrolled the names of over two hundred members.

We have held eleven regular and one special meetings, at which over twenty valuable and interesting essays and reports have been read.

Although at least three of our meetings occurred during very bad weather not one has failed to be a success. The fruits, flowers, and other horticultural products exhibited have been of superior quality and in greater numbers than for years past. The display of strawberries and flowers at our June show were excellent, while the fruit exhibited by the Society at the County Fair would have done credit to the tables in the horticultural hall at the State Fair.

I believe that much of the interest manifested in our work this year is due to the publication of our reports in book form, and would suggest that this work be continued next year. I wish to say but a word in connection with our library. We now have a safe place to put it. A few additions have been made, mostly by donations, and other volumes have been promised. The expenditures for this purpose thus far have been confined to express charges and postage. The enterprise of securing a large central library under the care of our Society, it seems to me, is one worthy of our careful attention. I think we should endeavor to gather a carefully selected list of books and publications that can be used for reference by any member of our society who may desire to thoroughly investigate any matter connected with horticulture. If rightly managed by our librarian and secretary, a very large proportion of these volumes can be secured by the exchange of our transactions.

Our finances are in a very prosperous condition, which is largely due to the perseverance and economy of our excellent treasurer and finance committee. It is very gratifying to me to know that the work we have accomplished has been accomplished at our own exertions and expense, without the aid of state appropriations.

I would suggest as a means of raising additional funds, if necessary, and also of making our Society a permanency, that we solicit life-memberships.

While it is right and proper for us to glory in our present prosperity let us not forget the future.

Our meeting to-day is the most important one connected with the success of this association held during the year.

The officers who have served you in the past have doubtless done their best, and deserve credit for their labors. But this is an age of change and progress; that which was considered superior one hun-

dred or even twenty-five years ago is to-day put down as inferior. The very foundation of our national government is based on the principle of frequent changes and advancement.

I would urge the changing of your principal officers for several reasons. First, because I believe that by putting new men at the head of the association new life and energy would be brought into the management, and a marked improvement would be the result. Second, if it is a burden to perform the duties of these positions, and I believe that in one sense it is, then we should all help to bear them, and if there is any honor in holding a position of that kind, and I think there is, then it is but right that the honors should be passed around.

Thanking you for your kind attention, and the very cordial and earnest support that you have given me while performing my duties for the past year, I bid you an official farewell.

LEN. SMALL, *Secretary.*

TREASURER'S REPORT.

RECEIPTS.

Amount remaining in treasury December 1882	$ 77.71
Received in membership fees during the year	56.50
Premium at agricultural fair	25.00
Received of President, money remaining in his hands after paying for hall for State Horticultural Society	2.15
Sale of strawberries at June meeting	4.20
Total	$165.56

DISBURSEMENTS.

Dec. 9, 1882.	To cash paid H. S. Bloom, as secretary	$ 10.00
Feb. 10, 1883.	To cash paid Livingston & Shaw, printing cards	5.00
April 14, 1883.	To cash paid Livingston & Shaw, printing pamphlet	5.70
May 22, 1883.	To cash paid Livingston & Shaw, printing pamphlet	5.70
June 16, 1883.	To cash paid N. B. Pratt for nails	.25
June 16, 1883.	To cash paid R. J. Hanna, groceries	1.80
June 16, 1883.	To cash paid H. S. Bloom, work for Society.	3.00
June 16, 1883.	To cash paid I. H. Hall, cream	1.50
June 16, 1883.	To cash paid L. E. Cunningham, strawberries	2.72
June 16, 1883.	To cash paid Mrs. G. Decker, premium on on bouquets	.50
June 16, 1883.	To cash paid H. Loring, premium on strawberries	2.00
June 16, 1883.	To cash paid E. Powell, premium on strawberries	3.00
June 16, 1883.	To cash paid L. E. Cunningham, premiums on strawberries	4.00
June 16, 1883.	To cash paid A. H. Burt, premium on roses,	2.00

June 16, 1883.	To cash paid M. Barnard, premium on strawberries	3.00
June 16, 1883.	To cash paid W.H. Knox, premium on strawberries	1.00
June 16, 1884.	To cash paid M. J. Barnard, for premium on roses	2.00
June 16, 1883.	To cash paid Jane Barnard, for premium on violets	1.00
June 16, 1883.	To cash paid Susie Small, for premium on bouquet	1.00
June 16, 1883.	To cash paid J. K. Eagle, lumber	.44
June 16, 1883.	Drayage	.50
June 16, 1883.	To cash paid Livingston & Shaw, printing	9.50
Oct. 28, 1883.	To cash paid entrance fee to Agricul. Fair	1.50
Oct. 28, 1883.	To cash paid Livingston & Shaw, printing	9.50
	Total	$76.61
	Total Receipts	$165.56
	Total Expenditures	76.61
	Dec. 1, 1883, remaining in Treasury	$88.95

MARY J. BARNARD, *Treasurer.*

The regular essayist was then called:

ROOT POWER.

BY HENRY MORTIMER.

Mr. President, Ladies and Gentlemen:

Again the time has arrived when, in accordance with previous arrangements, I am expected to have an essay for our Society. As nearly every horticultural subject has already been handled by abler pens, with some hesitation I select the one at the head of this paper.

In presenting the subject of root power I do not expect to announce much that is original. If I merely succeed in calling a more general attention to the subject than is usually given to it my object will be accomplished. Leaving out aquatic, parasitic and air plants, with many others of the fungus family not necessary to consider, it is assumed that every tree, bush, bramble, vine, and weed owes its existence to its roots in the soil. It follows, therefore, that increasing healthy root growth increases healthy growth above ground and that root pruning checks such growth. If, by examination, we ascertain the extent and direction of the roots of a plant, and by experiment the best conditions for their profitable growth, we are in possession of knowledge that enables us to assist nature in her various operations.

A fruit tree is something that we desire more from than mere growth of wood and leaves. If it has only sufficient root power to keep it alive and maintain a slow, sickly growth, it cannot produce fruit. It is like a machine with just power enough to overcome the

friction; in this case more power must be applied before we can get work from the machine, and the same is true of the tree, more root power must be put in action before we obtain fruit.

Roots do their best under special conditions of temperature, moisture and soil. A low temperature checks vegetable growth, injures and sometimes kills the plant. A high temperature causes a greater evaporation of water through the leaves than the roots can supply by absorption. In this way our trees and plants are often injured in one summer, the effects of which are manifest in the diminished crops in subsequent seasons.

The quantity of moisture in the soil is another important factor in the healthy growth of plant roots. Fruit growing on wet soil cannot be successful. Such soil is compacted, air cannot circulate through it, and the plant food in it is not utilized.

On high land during the continuance of a drouth, especially if such land has a gravelly or sandy sub-soil, the want of moisture may partially or wholly dry up the roots, thus injuring or killing the trees. Again, trees or small fruit plants may be in a soil poor in the necessary elements required for the growth of wood, or fruit, or both combined.

Having imperfectly described what may occur under the different conditions of temperature, moisture and soil, it may be well to ask if there is a way to avoid, or at least lessen, the evils occurring under the unfavorable conditions mentioned. If a healthy root growth produces healthy growth of tree, let us see if we can secure the first in order to obtain the second. Taking the fruit condition in sections of country where a very low temperature is of frequent recurrence, we must limit our selections of fruits to the kinds known to be hardy. Fortunately there are many kinds of hardy trees and small fruits, which those who have attended the meetings of our Society or read its proceedings already know, so that a repetition of names is not required here.

In regard to moisture, many of the low lands are too wet, yet in most cases such lands can be adapted to fruit culture, both large and small, by properly located tile drains.

For fruit growing on high lands, select such as have a clay subsoil, then in case drouth occurs, keep the cultivator going. During dry weather, for land that is in fruit, I know of nothing better than frequent stirring of the surface soil. This prevents the surface from hardening and cracking, which prevents the escape of the moisture which is constantly coming up from below, thus supplying food to the roots so necessary at this time.

Nicholas Ohmer, the disseminator of the Gregg raspberry, and one of the guiding lights of the noted Montgomery County (Ohio) Horticultural Society, succeeded, during a very dry season, in obtaining a good crop of berries by keeping his cultivators going through his fruit grounds, while some others, on land equally as good, but without such cultivation, gathered only a small crop of poor fruit.

On land too poor to produce fruit the remedy is apparent. Enrich it by manuring, plowing clover or other green crops under, or feeding stock on it for a season or two before putting it under cultivation. Fortunately for Kankakee county poverty of soil is not one of the stumbling blocks in the way of horticultural success. I believe, however, that no one crop can be constantly grown on the same land year after year without deterioration, unless manure or some other fertilizer is applied to compensate for the product removed.

A plant includes all there is of it. The parts that grow above the ground, the stem, branches and leaves, together with the parts that grow below the surface, the roots, rootlets, and all their feeders, constitute the whole plant. In a perfectly grown plant all the parts make a corresponding growth. All plant food is taken by the feeders in a liquid form. The roots of plants are attracted by plant food and grow towards it until they reach it, if placed near enough for them to do so. This explains why spreading manure over the entire surface is better than manuring corn in the hill. If the soil is compacted by the tread of stock or hardened by sunshine after rain, the air does not pass through the soil, and a large part of the plant food remains insoluble, the tender feeders cannot accomplish their work, and the whole plant is weakened. The cutting away of a part of the roots of a tree weakens it and retards its growth in proportion to the injury done. This is shown in the transplanting of large trees which recover slowly from the check received. Root pruning has been tried and recommended by some horticulturists in the care of tardy bearing fruit trees to bring them into bearing. Any injury which endangers the life of a tree may sometimes cause the growth of fruit, on the principle that nature desires the production of seed for the continuance of the species. Blue grass and some of our troublesome weeds will, after repeated cuttings, produce seed very close to the ground for the accomplishment of the same result. Among vegetables we find a great difference in their recuperative powers after root injury. The tomato will bear close pruning while the members of the gourd or squash family are extremely sensitive of any damage their roots receive, and are easily killed by breaking them. The cabbage plant endures transplanting, but if set out during warm weather the leaves droop, and it may be several days before the usual growth is resumed. The small portion of the root left on cannot support the leaves which remain drooping until a new root growth has taken place. If all the large leaves were taken off, leaving only the very small ones on the top, the plant recovers more rapidly, in fact, it does not appear to be affected by the removal, as I have ascertained by experiment.

Although the roots of different vegetables act differently under similar treatment, they appear to be subject to the same rule as fruit plants; that is, increase of root power gives increase of crop. Weeds

diminish the root power of our cultivated plants by appropriating to their own growth the plant food in the soil that otherwise would be used in the production of fruit, vegetables, and grain. Deep cultivation of fruit and vegetable plants breaks and destroys many of their roots, with consequent shortening of the crop. The fine feeling rootlets of most plants extend further and permeate the soil more thoroughly than is generally supposed.

Elbert S. Carman, of the *Rural New Yorker*, has satisfactorily demonstrated, by several experiments, that a much larger yield of potatoes can be obtained by flat culture than by the old and more common method of hilling up. Another fact, showing the advantages of perfect roots, is that fruit trees produced from seed and remaining where they came up are longer lived and more productive than trees grown by grafting scions in pieces of roots, the usual way that nursery stock is propagated.

Some wonderful cases of the longevity of seedling trees of the apple, pear, and peach, have been reported. Where a tree is grown from seed, nature sends a tap root deep in the soil; on high land during a very dry season this root with its branches may reach down to moisture, and be instrumental in saving the health and perhaps the life of the tree.

I have spoken of the advantages of frequent cultivation for the retention of moisture in the soil. Natures method is mulching.

Porosity and humidity of the soil of the forest is maintained by its annual covering of leaves, which in their decay also furnish fertility.

Such fruits as we cannot cultivate without injuring their roots can be mulched with great benefit. The blackberry for instance, loves a moist soil, if cultivated deeply after reaching bearing age many roots will be broken, thus lessening the crop and at the same time cause the growth of numerous suckers. If well mulched the ground underneath does not grow compact after rain, nor harden in the sunshine, and the labor of cultivation is saved.

Useless or troublesome plants are weeds. In a Turner or Cuthbert raspberry plantation all plants not needed for fruiting should be regarded as weeds and cut away. Closely grown plants cannot yield large crops, the root power is too much diffused and expended in the production of unnecessary wood and leaves. Every plant must have sufficient room for vigorous and abundant root-growth in order to produce its maximum crop of fruit.

In a large majority of cases our orchard trees are too closely planted. Roots of large trees often have the roots of other large trees crossing and recrossing each other, and all feeding promiscuously together. This should not be so, the roots of one tree are enough for the ground which they occupy. Instead of twenty feet apart I should prefer a distance of thirty-five feet for our large growing trees. If a "new departure" in fruit-growing were inau-

guarated by growing trees from seed of vigorous growing hardy long lived varieties, and budding them when small with the kinds of fruit desired without removal of the trees, I believe the time would come when forty feet apart each way would not be too great a distance for them.

Increased growth of vine and fruit is the result of grafting the delicate Delaware grape on the vigorous growing Concord. The phyloxera feeds on the roots and the vine dies. The pear is dwarfed by growing it on the quince, and the common apple by grafting on the Paradise or Donan stock.

Thus we see that vigorous, diseased and weak roots, produce corresponding results in the plants of which they form a part.

Our garden and field seeds have plant food stored in them for the sustenance of the young plantlets until they are able to absorb and assimilate food from the soil.

In the case of small seeds the plant food which they contain is quickly expended. If the tiny rootlets are not in contact with the soil they wither and die, and the seed is lost. Pressing the seed firmly in the soil will often insure its growth. Peter Henderson, an excellent authority, claims that thousands of dollars' worth of seed are annually lost for want of being firmed in the soil.

This shows us that all plant roots, from the smallest to the largest, must have an opportunity to do their work before success can be obtained.

In this paper I have accepted commonly received opinions where they coincide with my own.

I have differed from high horticultural authority where my limited observation and experience seem to warrant my doing so.

And now my humble effort is before you. Fortunately the usage of our Society regards all essays presented to it as proper subjects for discussion and criticism. In this way errors are corrected and truths approved. If horticultural truths are well rooted in the minds of the young and old, their roots will flourish, and in due time bring forth the fragrant blossom and the delicious fruit.

On motion of O. W. Barnard this essay was made the subject for discussion at the next meeting.

The President then announced the

ELECTION OF OFFICERS

for the year 1884, and appointed Messrs. Dickinson, Lane and Powell as tellers. Nominations for President were then made, A. H. Burt nominating Dr. A. L. Small, and A. S. Vail nominating Henry Mortimer. Mr. Mortimer declined and nominated Milo Barnard. The

vote was taken and resulted as follows: Dr. A. L. Small, 22; Milo Barnard, 8; O. W. Barnard, 1; blank, 2. Dr. Small was declared elected.

O. W. Barnard and Hon. Wm. S. Hawker were nominated for Vice-Presidents and the Secretary instructed to cast the unanimous vote of the Society for them.

Len. Small nominated H. S. Bloom for Secretary, and on motion the ballot of the Society was cast for Mr. Bloom.

H. S. Bloom nominated Mary J. Barnard for Treasurer, who was also elected unanimously.

Several nominations were made for Librarian, and a vote was taken which resulted in the election of Mrs. G. Decker.

Messrs. A. H. Burt, R. A. Lane and Mrs. E. Powell were elected members of the Executive Committee.

On motion of L. E. Cunningham the President and Secretary were instructed to select places and essayists for the Society's meetings during the coming year.

COTTON GROWTH.

BY MRS. A. E. SANASAK.

The greatest agricultural pursuit in the Southern States is the culture of cotton. Any one who has traveled through the Southern States has seen fields after fields, and can attest that there is presented to the eye an aspect equaled by very few other vegetations. It grows from seed planted in May or June. It is best adapted to sandy soils, and is planted in hills, like potatoes, about one and one-half feet apart.

It requires two or three weeks after planting before it will sprout; it is then cultivated, like corn or potatoes, and every weed exterminated.

It blossoms as it reaches a couple of feet from the ground, bearing large flowers, similar to a pink rose. When the petals drop off a small ball remains, which is the elementary stage of growth of the cotton ball.

Cotton continues to blossom and ripen without cessation until frost. On the same cotton stalks we find cotton balls in all stages — some blossoming, some green, some that have reached the required size, and finally some that are ripe enough to pick.

Cotton balls are of a greenish color, and when they have attained the size of an egg they split open at the top, exposing the

white cotton lint inside. In this lint is found the cotton seed, and to separate it from the cotton it is passed through a machine called a "gin." The seed formerly was useless, but now it is worth more than the lint itself, for it is utilized to make salad oil, cooking oils, oleomagerine butter, etc.

The great picking time begins about October 1st and lasts until December 1st.

After ginning the cotton it is pressed in bales of five hundred pounds and is ready for market. The approximate worth of a bale of cotton at the present time is fifty dollars. Of course it depends greatly upon the quality.

A farmer counts for a good crop one bale per acre; it often surpasses that on some farms. According to statistics this year, the cotton seems to yield only about two-thirds of a bale per acre.

Some have the query: Why can't cotton grow up north? Our answer is, "It will grow," but must be kept in a hot-bed, and before frost it must be brought in the house and treated like a house-plant.

Owing to the shortness of the season up north is the reason it is not cultivated like anything else.

Why can't you, botanist, florist, and horticulturist combined, who are yearly so enterprising in bringing your displays to the fair, start in and have a cotton plant all in bloom on exhibition; it would attract much attention, and be something new for hundreds of people.

MISCELLANEOUS.

Your committee on Fruits and Flowers would report as follows:

Mr. R. A. Lane had on exhibition some splendid specimens of Yellow Bellflower, Domine, Minkler, Westfield, Seek-no-Further and Minister.

O. W. Barnard exhibited several specimens of N. Y. Vandevere that were very fine.

Wm. Knox exhibited several varieties: Roxbury Russet, Ben Davis, Jonathan and Grimes Golden, the two latter varieties being exceptionally fine.

H. S. BLOOM,
Committee.

A. St. John exhibited six ears of pop-corn grown on one stalk: eleven stalks bore forty-six ears.

Mrs. Mary Jane Barnard placed three beautiful bouquets of flowers on the table.

On motion the meeting adjourned.

JANUARY MEETING, 1884.

Reported by H. S. Bloom, Secretary.

The Society held its first monthly meeting for 1884 on Saturday, January 12, in the Supervisor's room, Kankakee.

The meeting was called to order by President A. L. Small. The minutes of last meeting read by the Secretary and approved by the meeting. The President said that unfinished business was in order.

Milo Barnard — As our president-elect was not present at our last meeting, I desire to say a few words under the head of unfinished business.

Although the secretary's report contains all that need be said touching the success of our Society for the past year, and also many valuable suggestions for the guidance of our organization in the future, still a few words from me, as your retiring officer, may not be out of place.

For seven years the horticulturists of this and adjoining counties have worked together in an organized capacity for the advancement of horticulture, for the mutual benefit of the members, and for the public at large, and during the entire existence of the Kankakee County Horticultural Society you have done me the honor to choose me as your presiding officer, for which I now return my sincere and hearty thanks for the confidence and trust you have reposed in me, and the cheerful and efficient help you have always so heartily rendered me, without which my feeble efforts would have availed but little, and I now ask you, as you love the cause that we have long labored to up-build, to give the same helpful assistance to my successor that you have always rendered me. Let our Society in the future, as it has been in the past, be a school where we are all teachers and pupils by turns; let us strive to learn something new each season, and impart it to our fellow members in return for the many valuable lessons we receive from their untiring energy and perseverance. Thus each one receives, and is justly entitled to, the benefits arising from the knowledge and experience of the whole class. Time has fully demonstrated that our Society acted wisely at the start in making no distinction between the sexes, touching society work, and the encouragement we have given to the young people to join us in horticultural labor, both in organized capacity and the more practi-

cal part in garden and orchard, has been productive of much good, and will continue to bear fruit long after we have laid down the pen, the spade, and the hoe, and are gathered to our fathers. Yet I think there is need of more careful and systematic encouragement in this direction. Let us remember the words of W. H. Ragan, of Indiana, when he so feelingly rehearses the words of encouragement the late Dr. Warder bestowed upon him at the first horticultural meeting he ever attended. He says: "Those words will never be forgotten. To think that the then celebrated Dr. Warder would interest himself in a stripling of a boy as I was at that time, made such an impression on my mind that it had a controlling influence in shaping the whole after part of my life." It is not alone the knowledge of horticultural matters that we obtain by organization, but we enlarge and broaden our views on many other subjects, adding depth and breadth to our minds by coming in contact with others, for no one is so perfect in knowledge but they may learn something from most every one they meet on some of the subjects useful to mankind, and certainly not one of the least advantages of meeting together is the social improvement and pleasure we enjoy, for our social natures are as susceptible to improvement as any other part of the complex mechanism we call man. A lifetime isolation, hard and constant toil, may bring success in a monetary point of view, but prove a disastrous failure socially, intellectually, and in many cases, morally. Is a success that proves such a ruinous failure to be desired? Rather let us strive for success in everything that tends to build up true worth and manly character, and to do this a sufficiency of what the world calls the money is very convenient and necessary, but should be considered a means, and not an end, for hoarding does no one any good. The successful maintenance of organizations of the people for any legitimate purpose aids greatly in developing the better traits of human character, as well as the material resources of our country. And amongst all the secular institutions of our land the horticultural societies are foremost in beautifying this fair earth of ours; ornamenting and rendering more lovely the works of nature, causing the wilderness and waste places to bud and blossom as the rose, where tree and vine make glad the thankful heart by their abundant fruitage. And in no other organization of similar character is friendship more true and lasting. Attachments formed at our meetings usually remain strong and binding to the close of life, with a feeling

tribute of kind and loving words for those who have finished their labors and have passed to the unknown land. I now cheerfully surrender all honors, emoluments, care and labor incident to the position to my successor, and bid you an official farewell.

President Small thanked Mr. Barnard very kindly on behalf of the Society for his kind wishes for the prosperity and well-being of the Society, and hoped he would always take an active interest in its proceedings.

PRESIDENT SMALL'S INAUGURAL ADDRESS

Ladies and Gentlemen — Members of the Kankakee Valley Horticultural Society:

I will follow the example of my worthy predecessor by giving you my annual address at this, our first meeting of the new year. I have chosen for my subject "Transactions of Horticultural Societies," and will attempt to give a review, which must necessarily be brief, of such meetings of horticultural and kindred societies as I have attended the past year.

First was the meeting of the Northern Illinois Society, held about a year ago. This was rather slimly attended. But little interest was taken in the discussions; no enthusiam or even animation displayed, and I can recollect nothing worth recalling that was done there. The transactions were published with those of the State Society, and you all have, doubtless, read them or can do so if you wish.

Next was the meeting of the Mississippi Valley Horticultural Society, held in February in the city of New Orleans. This I attended in company with five other members of your Society, Mr. and Mrs. Tim. Dickinson, Mr. and Mrs. Elias Powell, and Mrs. Small. Notwithstanding the fact that many who expected to attend were kept away by the unprecedented floods extending over the northwest at that time, rendering travel by railroad dangerous, and, in many places, absolutely impossible, there was a large gathering and many noted horticulturists were present. Papers of much interest and value were read, and had more topics been introduced, and the discussions taken a wider range and not confined as they were almost exclusively to the strawberry, many persons in attendance would have been better pleased.

June the 20th, in company with your secretary, I attended the eighth annual session of the American Association of Nurserymen, held in St. Louis. The Mississippi River was again very high, overflowing great tracks of country, but this did not lessen the attendance and the meeting was a large one. These nurserymen's meet-

ings are more for social intercourse and pleasure than for business. We were taken up and down the big river on an elegant excursion boat, driven in carriages over the parks, fair grounds, and zoölogical gardens, taken out of the carriages and shown all the animals, birds and curiosities, and at night taken to the theater and given reserved seats. The most enjoyable thing to most of us was the ramble through Shaw's botanic gardens, which I would like to tell about but will not now impose upon your time.

The fifty-fourth annual exhibition of the Pennsylvania Horticultural Society, which was held in Horticultural Hall, Philadelphia, the day before the opening of the nineteenth session of the American Pomological Society, was to me the most interesting and instructive of all. This was pronounced to be, by persons who ought to know, the finest display ever made in this country of rare and beautiful-leaved plants and artistic designs of cut-flowers. My first impression, as I passed into the hall, was that I was entering a vast tropical garden. A mass of bright-hued foliage burst upon the vision. In long lines and in groups were arranged palm tree ferns and other lofty tropical plants in almost countless numbers with waving plumes and pendulous boughs, while the tables and floor were almost hidden with plants of lower growth whose leaves rivaled the brightest flowers in displaying all the colors of the rainbow. In one corner of the hall was a large tank, in which was displayed a collection of aquatic plants alone worth traveling many miles to inspect. The historic *Papyrus Antiquorum*, or paper plant of Ancient Egypt, with its tall green stems and grass-like plumes, with the no-less historic *Nelumbium Speciosum*, or sacred lotus, of the same people, afforded an elegant background in front of which were arranged water lilies from all parts of the world. I cannot refrain from here noting a very interesting peculiarity of this plant, the lotus. The leaves are covered with a fine microscopic down, which, retaining a film of air over the upper surface, prevents it from being wetted when water is poured upon it, the water rolling off in drops; this has a very pretty appearance, the drops of water looking like drops of molten silver. The Hindoos have a proverb founded on this peculiarity of the leaves, to the effect that the good and virtuous man is not enslaved by passion nor polluted by vice; for though he may be immersed in the waters of temptation, yet, like a lotus leaf, he will rise uninjured by them.

In viewing this magnificent collection of water lilies one would naturally first note the great contrast between the huge lilies of Africa and the pigmy ones of China, with leaves only half an inch in diameter. The largest flower noted was a variety of the Nymphæ, of a pink color and about a foot in diameter, gracefully reclining upon the water between green leaves, each two feet across. The big leaves of this plant, however, were dwarfed in appearance by those of the Victoria Regia floating near them. The enormous leaves of this queen lily were four or five feet across, and it is asserted that

the weight of a twelve-year-old child will be borne up by one without submerging it. The cut-flower designs received much more attention and praise from the crowd than the live plants, but to me were no where near so attractive. The vast number and variety of designs were bewildering; some of them simply wonderful on account of the patient labor required and ingenuity displayed in their construction, but it does not seem to me desirable to encourage the devoting of so much time and talent to the construction of artistic designs out of material so perishable.

On the lower floor of the hall were displayed the fruits of the American Pomological Society. One exhibitor, Mr. E. Sotterthwait, filled three tables, showing two hundred varieties of pears, besides large collections of peaches, apples, grapes, and other fruits. Many other notably large collections were shown, in fact, the entire floor of this immense hall was crowded with tables all full of fruits. On one table were thirty varieties of plums, and on another forty-five varieties of grapes. Wilder medals were awarded to Mr. Sotterthwait for peaches, to the Minnesota State Horticultural Society for apples, to Col. Wilder for pears, and to J. H. Ricketts for seedling grapes. On the last day of the session the American Pomological Society visited the city buildings, the Academy of Fine Arts, Girard College, and the Park in the afternoon, and in the evening attended a reception given by the Pennsylvania Society at the rooms of the Union League. This Society is to hold its next session in 1885 in Michigan, and I hope we can all attend.

Many of you attended the annual meeting of our State Society recently held in Bloomington, and will soon have the printed transactions containing a complete report of the three days' session. Our Society is to have fifteen volumes of these transactions, which will give every one a chance to read them, and of course it would be superfluous for me to attempt any review of this meeting.

I have had for years a sort of undefined impression or belief that local societies like this home Society of ours, were doing more for the actual advancement of horticulture than the great societies I have been talking about, but my life as a practical horticulturist has been too busy — the struggle for survival too hard — for me to be able to spend much time or money in attending meetings away from home, but the aid of boys at home, and the greater prosperity of our business for a few years past, have given me the long-wished-for opportunity to attend the meetings, and my vague impressions have become strong convictions. It is true, our reports have not the prestige of the noted and honored names attached to theirs, our articles have not the elaborate finish and elegant diction of experienced and ready writers, but literature is not horticulture, and in these local societies, where friends and neighbors meet together in a social way and talk over the practical work and aid each other by imparting information of all the little things acquired, more good is, and can be, accomplished, than in the great talking societies.

The President's address was well received.

The President said he wished to speak of a matter before he forgot it, and that was that the Northern Illinois Horticultural Society hold their annual meeting at Elgin, commencing Jan. 23, 1884, and the members of this Society are cordially invited to attend, The President further said that it would be well for this Society to appoint two delegates to represent it at that meeting.

M. Barnard moved that Dr. Small be appointed a delegate, with power to appoint a colleague, to represent this Society at that meeting. Motion carried.

It was also moved and carried that our delegates be instructed to invite the Northern Illinois Horticultural Society to hold its next annual meeting in this city.

There was some discussion had at this point in regard to the selection of essayists for the ensuing year.

Len. Small moved that the matter of essayists be left with the President and Secretary.

Mr. Mortimer said that this was a matter of considerable importance. We want persons who are willing to write and to give some thought and time to the subject upon which they treat. He was in favor of leaving it as proposed, as the President and Secretary could solicit different persons to write essays, and would be more likely to find the proper persons for such duties than the members of this Society could do to-day.

M. Barnard spoke in a similar strain, and suggested that some of the younger members of the Society be solicited to write essays: they will soon fill our places, invite them to commence now. The motion was adopted.

M. Barnard moved that a synopsis of the proceedings of January and February, 1883, be prepared by ex-Secretary Small, and inserted in the proceedings of the year. Carried.

Mr. Barnard also moved that we publish the proceedings of our Society for the ensuing year as in the past.

Mr. Cunningham strenuously opposed the publication in pamphlet form, giving as a reason the great cost of publishing it in that

way, and that the newspapers were willing to publish our proceedings in their columns as a matter of interest to their subscribers. Barnard's motion prevailed.

Moved by Len. Small that the President and Secretary, with Milo Barnard, be appointed a publishing committee. Carried.

The Secretary was instructed to have five hundred programme cards published at his earliest convenience.

REPORT OF FRUIT COMMITTEE.

Your Committee on Fruit Exhibition report specimens of the following varrieties of apples contributed by Milo Barnard: Soulard Crab.—a yellow crab, large and fine—Rawles' Janet, Roman Stem, Nelson's Sweet, Jonathan, Tallman's Sweet, and Willow Twig—all in good condition; also specimens of the Fameuse, in good order. The Roman Stem was exceptionally fine.

Dr. Small exhibited specimens of the Willow Twig and Albemarle Pippin, a famous Virginia apple—fine specimens.

H. Mortimer,
T. C. Dickinson,
O. W. Barnard,
Committee.

On motion the Society adjourned.

PROCEEDINGS

OF THE

JO DAVIESS COUNTY

HORTICULTURAL SOCIETY.

FOR THE YEAR 1883.

Reported for publication by MRS. DR. S. C. HARRIS, Secretary.

JANUARY MEETING.

The January meeting was held at Mrs. J. G. Baker's.

Officers for the year were elected as follows:

President — Timothy Hallett.
Vice-President — W. T. Crummer.
Secretary — Sarah C. Harris.
Provisional Secretary — Mrs. Geo. S. Avery.

Chairmen of bureaus as follows: Of Arboriculture, Lawns and Ornithology, T. Hallett; of Culinary Vegetables, Fred. Chetlain; of Floriculture, Mrs. H. P. Corwith; of Fruits (orchards, small fruits and vineyards), W. F. Crummer; of Botany, Vegetable Physiology and Entomology, S. C. Harris; of Canning, Preserving, Pickling and Storing Fruits, Mrs. W. F. Crummer.

Discussion on Arboriculture being in order, the chairman of the bureau presented the following question, which had been submitted to him for answer, viz: "It is a well-known fact that when the prairie fires ceased to devastate annually the vegetation of our river hills and bluffs, a fine growth of oak, hickory and poplar timber very soon covered said bluffs. Whence came the seeds from which these trees grew?"

The writer confessed that he could not answer the query. Acorns, walnuts and hickory nuts are not blown far by the winds, yet fine groves of timber of these sorts may now be seen on the same bluffs where, in 1840, he hunted the cows and mowed hay, the grounds being then as destitute of timber as his head was now of hair; and no trees of those sorts growing near enough for the seeds to be carried thence by the natural and ordinary vehicles.

FEBRUARY MEETING.

The February meeting was held at Mrs. Capt. Burns'.

The chairman of bureau of Culinary Vegetables presented the following list of varieties, which he had found most satisfactory, in being grown in his garden in West Galena, viz: Asparagus, Ban's Mammoth; Beans, Wax or Stringless; Beets, Eclipse; Cabbage — Early, Henderson's Early Summer; Late, Stone Mason; Carrots, Danver's, new; Cauliflower — Early, Snowball; Late, Veitch's Autumn Giant; Celery, Boston Market; Corn — Early Minnesota, Crosby's Early, Stowell's Evergreen; Cucumber — Improved Long Green, (Early Russian, sec.); Egg Plant, New York Improved Large Purple, Kohl Rabbi, Early White Vienna; Lettuce — Hanson, Dwarf Green; Onion — Yellow Danver's, Large Red Wethersfield; Parsley — Double Curled; Parsnip — Yellow Crown; Peas — McLean's Little Gem, Champion of England; Pepper — Sweet Mountain, Long Red Cayenne; Potatoes — Snow Flake, Early Ohio, Burbanks' Seedling; Turnips — Strap Leaf Red Top; Squash — Early Summer, Crook Neck, Winter Marblehead, Fall or Winter Hubbard, Turban; Tomatoes — Livingstone's Favorite, Hathaway's Excelsior; Radish — Early French Breakfast, Buist's Yellow Summer Turnip; Rutabaga — Sweet Russian; which list was, by a unanimous vote of the meeting, recommended for use in cultivation.

MARCH MEETING.

The March meeting was held at the home of Mrs. D. S. Haines.

Mrs. H. P. Corwith, chairman bureau of Floriculture, submitted an excellent written report on culture of flowers in windows, also on nomenclature and color of flowers.

Mrs. Parker called attention to the fact that the common sunflower, in growing, is thought to have sanitary powers and influence similar to those of the far-famed Eucalyptus globolus, so that by a liberal growth of sunflowers an unhealthy, miasmatic location may become salubrious.

Mr. Crummer recommended that for starting plants grown from fine delicate seeds, sown in pots, the pots be stood in saucers of water in preference to having the surface of the soil sprinkled or deluged, as is commonly done.

APRIL MEETING.

The April meeting was held at Mrs. J. Hellman's.

Mr. W. F. Crummer, on behalf of bureau of Fruit Culture, read a full and exhaustive paper on the strawberry and its culture. He spoke of the special susceptibility of this fruit to influences of soil and location. For his vicinity, in West Galena, he recommended Miner's Great Prolific, Sharpless, Chas. Downing, Mt. Vernon, Crescent, Glendale, Cumberland, Triumph and Bidwell. Of Raspberries — red, Cuthbert and Turner; black, Gregg and Mammoth Cluster — make it mostly Gregg. Blackberries — Snyder (old Ironclad) better to withstand severe cold than our native wild one; Ancient Briton, Taylor's Prolific.

Mr. Hallett, in reply to a question referred to him, submitted the following answer: Our plantation (of blackberries and raspberries) was set in the spring of 1880, and although we have reset it in many places each spring since, we have by no means what we consider a good stand of canes at present. The plants, though not difficult to transplant, seem not very tenacious of life while young, and are easily ruined by the high winds that frequently prevail during some part of the summer. In 1882 we commenced picking raspberries July 4th, and blackberries July 21, harvesting about one thousand quarts per acre of the former, and one thousand two hundred quarts per acre of the latter. The quantity would have been decidedly less had it not been for the timely rains which seemed to come "nights and Sundays" during the picking season. The soil is similar to that of our table-lands in this vicinity, with the clay predominating. It might be called good corn ground. It has a general northern inclination and is naturally well drained.

The following list of apples was adopted by the Society as comprising the varieties which experience had sanctioned, viz.: Early, Red Astrachan and Duchess of Oldenburg; for gardens, Tetofskey; summer and fall, Famense and Alexander; winter, Willow Twig. The Wealthy apple (late fall and early winter) originated by Peter M. Gideon, of Minnesota, and endorsed by the State Horticultural Society of Iowa, was recommended for trial.

Mr. Summer said that the finest show of apples which he had seen at the recent meeting of the Iowa Horticultural Society was a lot of unnamed seedlings, grown by one man in the state. Let fruitmen of the northwest bestow upon growing in their own soil and climate some of the labor and money now consumed in importing, acclimating varieties from the Western States, and we may have a new era in fruit culture in this hyperborean region.

MAY MEETING.

The May meeting was held at Mrs. H. P. Corwith's.

On Entomology, Mr. W. F. Crummer, by request, presented a paper on the Snowy Tree Cricket, (*Œcanthus virens,*) an insect which he found very pernicious by cutting into raspberry canes, which it uses as a nidus for its eggs.

Mr. Hallett gave a sketch of the labors of the late Capt. Beebe and Prof. LeBaron in introducing the Chalcis Fly into his (Mr. H.'s) orchard, in order to colonize said insect in one vicinity, for the purpose of destroying the Oyster-shell Bark Louse, of which latter insect the former is a parasite. In course of time the bark louse had ceased to give him trouble. He could not say whether or not the Chalcis Fly had done the good work.

Mrs. Harris read a paper on "Domestic Animals as Insect Parasites." She believed in swine, sheep, chickens, geese, and ducks, as the best of all scavengers and insect destroyers.

JUNE MEETING.

The June meeting was held at Mrs. Clauer's.

Mrs. Crummer read a full and well written paper upon Fruit-Canning. She attached much importance to having the fruit ripe, and perfect, and perfectly picked. Should be canned the same day as harvested. Must not wait until the last end of the season for canning if you desire a good article; it must all be done in the nicest and daintiest manner. Use silver, not iron spoons.

Mr. Hallett spoke of the rapid increase in demand for and supply of fruit. He remembered the first barrel of apples he had ever seen.

JULY MEETING.

The July meeting was held June 24th, at Mrs. Crummer's.

A paper on Ornithology, by Edgar Hallett, was read. He was a friend of the birds; he thought we only paid an honest debt when we let the robin feed upon our cherries, for the same bird, a few weeks before, had been seen carrying to his nest the grubs that were wont to destroy our crops. Yet he acknowledged the English sparrow an outlaw.

The main business of the meeting was feasting upon Mrs. C.'s magnificent strawberries with Jersey cream. All the members were able to do good work in this department.

AUGUST MEETING.

The August meeting was held July 28th, at the Hallett Fruit Farm.

Some fine specimens of early Vermont potatoes were exhibited, the same having been grown after red clover, as follows: the garden had become so old by continued cropping in vegetables, depending upon stable manure as a fertilizer, that potatoes could scarcely be

grown in it larger than robin's eggs. Two years ago, in order to rejuvenate the soil, the exhibitor had a goodly portion of it sown with red clover. This crop, as fast as grown, had been mown and fed to the cow, two or three mowings to the season, so that almost no clover tops had lain upon the ground and been spaded in previous to planting the potatoes in the spring. The clover seemed to have transmitted to the soil, through the laboratory of its roots, the food drawn by its green parts from the atmosphere and rains.

For all the year round Mr. Crummer thought the Early Ohio potato the best variety known, "coming in" before the early Vermont. Next in order of merit for quality and yield he classed the White Elephant and Burbank's Seedling — these two latter being for fall and winter use only.

The most enjoyable feature of the meeting was the stroll over the well-cultivated grounds, with their growth of blackberry and raspberry canes fairly loaded down with fruit.

SEPTEMBER MEETING.

The September meeting was held at Mrs. Fred. Chetlain's.

Interesting papers on the oleander and pansy were read respectively by Mrs. Baker and Mrs. H. H. Chandler.

On behalf of the bureau of Floriculture a resolution was passed warning people against tree and plant peddlers.

OCTOBER MEETING.

The October meeting was held at Mrs. J. G. Baker's.

The subject of orchards was discussed, and the following resolutions passed, viz:

Whereas, Judging from the experience of many persons in this county who have grown fruit for market for years, it appears that growing apples as a business will not pay; but believing that every farmer should and can have sufficient apples for home consumption, which will pay him and his family large returns; therefore

Resolved, That the JoDaviess County Horticultural Society do recommend every farmer to plant an orchard of not less than fifty of the best apple trees, and that another of the same number be planted upon new ground every ten years thereafter, believing that, if properly cared for, such an orchard will be productive of not only a source of profit, but "a thing of beauty and a joy" to be enjoyed by the farmer and his family.

Resolved, That for the busy farmer this Society recommend, that after three years careful cultivation, red clover, with a small mixture of timothy, be grown in the young orchard, and that as the trees mature, swine, sheep, or calves be permitted to run at large therein, for the purpose of fertilizing the soil and of destroying the larvæ of the codling moth by feeding upon the fallen fruit.

An excellent paper upon the culture of small fruits, from the pen of Edgar A. Hallett, was read.

NOVEMBER MEETING.

The November meeting was held at Mrs. Dr. Godfrey's.

The clover-root borer *(Hylesinus trifolii)*, which had proved quite destructive latterly in some parts of the county, was discussed at length by Messrs. Bouton, Chetlain, and Crummer (the latter gentleman read a highly interesting paper upon the subject), and others. The clover worm *(Asopia costalis)*, destructive to clover hay, was also described. To prevent the ravages of the former insect it was proved best to mow the clover field late in the season, in order that there be no mulch upon the ground to shelter him in winter. Of the latter, always stack the hay in a new clean place, or if it is to be housed, sweep the mow-bottom out thoroughly before putting in the new crop.

DECEMBER MEETING.

The December meeting was held at Mrs. Harvey Mann's.

Fruit canning, preserving, and pickling, apple butter, the germinating principle, its destruction by heat, and mould in sealed bottles of fruit, were generally discussed.

SARAH C. HARRIS, *Secretary*.

FEBRUARY MEETING, 1884.

This, one of the oldest, if not *the* oldest Horticultural Society of our state, held its annual election of officers at its regular monthly meeting, on Saturday, February 2, 1884, as follows:

President—T. Hallett.
Vice-President—W. F. Crummer.
Secretary—Mr. Dr. S. C. Harris.
Provisional Secretary—Mrs. J. E. Baker.
Executive Board—Miss Jennie Mann, Mrs. Fred. Chetlain, Mrs. H. H. Chandler, Mrs. T. Hallett, Mrs. Dr. Godfrey.

Chairman bureau of Arboriculture, Lawns and Ornithology, W. F. Crummer.

Chairman bureau Culinary Vegetables, Miss Jennie Mann.

Chairman bureau of Floriculture, Fred. Chetlain.

Chairman bureau of Fruit Culture, including orchards and small fruits, T. Hallett.

Chairman bureau of Botany, Vegetable Physiology and Entomology, Mrs. W. F. Crummer.

Chairman bureau of Canning, Preserving, Pickling and Storing Fruits, Mrs. H. H. Chandler.

During the last year regular monthly meetings have been held, proceedings published, and we trust much good done.

PROCEEDINGS

OF THE

WARSAW HORTICULTURAL SOCIETY

FOR THE YEAR 1883.

Reported for publication by J. T. JOHNSON, Secretary.

The January meeting of the Warsaw Horticultural Society was held on the 24th, with a full attendance of members and officers.

The reports of standing committees for 1882 being called for, J. T. Johnson, chairman of the orchard committee, reported as follows: The season was very unfavorable for both the health and fruitfulness of orchards, the fruit being mainly cut off by spring frosts and the trees seriously injured by long continued wet. He had occasionally seen an orchard bearing a fair crop of fruit, while others near by were bare. One of his neighbors had a healthy, well cultivated peach orchard that produced nothing, while others apparently not so likely to bear, were quite full. He would not undertake to account for these freaks. He said fruit trees went into winter quarters in good condition, but feared the effects of excessive cold. He thought peach buds were killed.

A. C. Hammond said peach buds were killed early in December, and he feared the excessive cold of the last week had killed the trees. The mercury sank to 30° below zero in some places, and he thought this would kill peach trees to the snow line. Cherry trees were badly injured last season, and he thought the present winter would finish them. The only apparent injury to apple trees has been the splitting of the trunks by frost. He thinks the present indications point to a bountiful apple crop.

President Dennis said the strawberry crop of the past year was light, but prices exceptionally good. Raspberries also light, although Turner was the best for years. This is one of the varieties that every farmer should plant for his own use. The canes have been injured by the cold, and the next crop will be light. Among blackberries, the Snyder, as usual, did the best, although the Kittatinny was fair. Canes are badly injured, and we shall have nothing but Snyders this season.

H. D. Brown read the following report upon nurseries: The winter of 1881–'82 was mild, and the spring opened very favorably for nursery stock. The supply on hand was sold before the season for planting was over, the amount being the shortest of the past ten years. The season of 1882 was too wet for trees in the nursery to make a good stalky growth. The consequence is a light supply for spring sales. The Ben Davis is still the leading variety of apples in demand, but unfortunately the variety of trees produced does not make much difference, since the nursery business has gone largely into the dealer's trade, and if you can only supply him with a good growing tree, the average dealer will make you any variety you may call for. The fact is the local nurseryman can hardly live or get rid of his stock, unless he wholesales to a dealer, or hires an unscrupulous agent. The result is that many small nurseries are either growing stock for the dealer or going to the wall, and the reason is because the average planter (not the experienced horticulturist) will give his order rather than go in person to a known and reliable nursery. Cherry, pear and peach trees are scarce, and those standing in the nursery, in this region, are injured by the winter, while apple trees, evergreens and ornamental stock are in fair condition and supply. The mercury has been ranging 20° degrees below zero, yet the protection given by a foot of snow may save many of our plants.

Mr. Hammond read a letter from D. H. Simmons, of this county, saying that he proposed to plant five hundred apple trees in the spring, for market, family, and feeding purposes, and requesting a list of varieties most suitable. He wanted two-thirds winter and one-third early varieties, one-half of the latter to be sweet, from early to late, for stock-feeding, and wished to limit Ben Davis to one hundred. He (Hammond) submitted the following list as the best that could be done under the circumstances, but with the remark that it was unsatisfactory, and that under similar circumstances he should plant at least 250 Ben Davis: —Sweet June 5, Sweet Bough 5, Golden Sweet 15, Bailey Sweet 15, Winter Sweet Paradise 15, Striped Sweet Pippin 15, Tallman Sweet 15, Early Harvest 3, Red June

3, Rambo 4, Sops of Wine 5, Red Astrachan 10, Fall Orange 10, Maiden's Blush 50, Ben Davis 100, Jonathan 50, Red Canada 50, Grimes' Golden 50, Geniton 30, Hubbardston's Nonesuch 20, Wythe 20, Baldwin 10, Yellow Bellflower 5.

This list was criticised by several members, who failed, however, to make any suggestions in relation to its improvement further than increasing the number of Ben Davis.

W. S. Grover thought we should be very cautious about recommending lists, as they might some day return to plague us. This view was generally concurred in, and while it is our duty to suggest, we should recommend varieties with the greatest caution, remembering that soil and location have much to do with success.

Adjourned to meet in Hamilton the second Wednesday in February.

FEBRUARY MEETING.

The City Hall was the scene of an interesting meeting to-day. President Dennis called the meeting to order at one P.M. A large table was profusely covered with choice fruits and vegetables, the products of the well-cultivated gardens and orchards of Messrs. Rockwell, Dennis, Brown, and others of Hamilton. There were apples, celery, beets, carrots, parsnips, salsify, potatoes, squashes, turnips, onions, corn, etc., in great variety and of good quality — a real horticultural exhibition.

On Entomology, a report from C. C. Hoppe, of Warsaw, says: I discovered late in the fall numbers of the cabbage butterfly taking refuge under the eaves of buildings, from which they may be expected to emerge this spring unless destroyed.

A. C. Hammond, J. C. Berry, and James T. Johnson reported on the condition of orchards, as follows: It is possible that the injury to orchards will be found greater than anticipated. Old orchards are generally in a bad condition. All orchards under twenty years of age are in fair condition. A fair crop of apples is yet possible.

J. C. Berry gave a word of caution to those intending to head back their peach trees this spring. Much discretion is necessary in this matter. Most peach trees will need heading in, but not too severely. Some of the last growth must be preserved.

C. N. Dennis said: It is probable that early varieties of peaches are more injured than late ones, as they ripen their wood later.

C. F. Darnell said: Cold rain is the most fruitful source of leaf blight, and also of scab.

Mr. Darnell has a theory for producing good and constant crops of that excellent apple, the Bellflower. He said that all that is necessary is to take thrifty seedling trees and bud them three or four feet from the ground. He cited instances where they had produced annual crops. He also claims to have good success by top-grafting the Ben Davis with the Winesap or Rawles' Janet, and that even the Ben Davis produced finer fruit than when on its own roots.

C. N. Dennis combated this idea, and said it is susceptible of proof that the top of the tree exercises a controlling interest over the root.

H. D. Brown thought small fruits were probably winter killed to the snow line.

D. Messick recommended the Turner raspberry for home use.

H. D. Brown said the Mammoth Cluster produced for him four times the quantity of fruit.

FARM CROPS.

J. L. Piggott — Young plantations of timothy are doing well; old meadows are generally in bad condition from being foul with other deleterious growths. Wheat is emerging from its bed of snow looking well.

A member asked how he should get a blue-grass lawn.

Mr. Sympson said: Prepare your lawn for grass and sow or not, as you may choose, as time will give the blue-grass.

H. D. Brown said: Plant your lawn to strawberries; then go fishing (neglect them) and you will get the blue-grass.

The essay, "Farmer's Gardens," by C. B. Rockwell, led to the following discussion:

J. C. Berry said a man can do more work in three hours with a horse and cultivator than can be done by a woman in a whole week.

J. M. Berry is not prepared to give up the spade in all cases. He can make his early lettuce and radish beds and the like without the horse.

Mr. Hays had raised over two hundred bushels of the Red Weathersfield onion from seed the past season on a half acre of land planted the first of May. Land intended for early garden crops is benefited by fall plowing.

J. M. Berry introduced the subject of pruning, and said the apple orchard should be pruned sparingly this spring, as many trees were in poor condition to receive a shock. The best time to prune is when the tree is in its most healthy condition and growth (May or June), but the best method is to care diligently for the young tree, rubbing off the buds; then little pruning is needed in after years.

C. F. Darnell said: You must study the character of the tree. If you prune Willow Twig in May or June, or, in fact, almost any time, you will get blight, and many varieties bleed too freely.

C. B. Rockwell said: He would never cut a branch that was over two years old. He is certain that old orchards are often pruned to death. In this matter intelligent discretion is much needed. Judicious pruning, done at the proper time, gives thrift to the tree, and color and quality to the fruit.

J. L. Piggott said: Winter pruning gives superfluous water sprouts; a cut made in May or June heals readily.

AN ESSAY.

BY C. B. ROCKWELL, OF MONTEBELLO.

The old English poet, Keats, has said, "A thing of beauty is a joy forever." Allow me to transpose it for once into a more practical sentiment, and say, "A good garden is a solid comfort forever," and then I will try to tell you, to the best of my ability, how to have a good garden.

The first thing to do is to make up your mind that you will have a good garden; a garden in every sense of the word. Not simply a few things that will give you a small amount once or twice a week, but one that will furnish you all kinds of vegetables ten months in

the year, and have them every day. One half acre, well cultivated, will repay, in the satisfaction it affords, all the labor expended upon it. The garden should be about twice as long as it is wide, as this enables you to do a large amount of the work with a horse and less by hand; the former will prove a more acceptable method to the average man than the latter. Do not be afraid of getting your ground too rich, for that is an impossibility. Where any one has the means, it will pay to put in tile drains on low situations. If you cannot do this, it will assist you very much, and is best, to plow the land very deep in the fall in narrow beds, say twenty to thirty feet broad, leaving the last furrows open to carry off the surplus water. This will facilitate early planting. As soon as the ground is in the proper condition in the spring (which will be before other work in field can be done), plow, harrow, drag and mark this ground. If you do your work faithfully it will be in fine condition to receive the seeds. Commence on one side, making your rows three feet apart lengthwise. Plant all your low-growing vegetables together. I would only plant sufficient corn and potatoes for early use, the principal crop being elsewhere. The smaller vegetables will need weeding once, if not twice, then, if not at any other time, the farmer will bless his lucky stars that he has a wife. After the vegetables are up so that you can see the rows a horse and cultivator can be used. A five-tooth cultivator, that can be opened or closed, is best. An implement can be made quite cheaply at home by using harrow teeth, making the sides quite heavy and three and one-half feet long, the shape of a harrow, and two and one-half feet wide. There are many half hours during the season that this implement can be used to good advantage in keeping the ground free from weeds and in a nice clean condition.

Part of my seeds I am able to save every year, but there some that require more careful treatment than I am able to give. These I purchase of professional seedsmen.

The following garden products succeed well in this region, and give good satisfaction, to-wit: Beets, Early Bassano; Beans, Round Pod Valentine, Large White Lima and London Horticultural; Celery, Boston Market; Cabbage, Early Winningstadt; Carrots, Early Horse or Long Orange; Cucumber, Early Cluster; Corn, Stowell's Evergreen or Crosby's Early; Watermelon, Phinney's Early; Okra, Dwarf Green; Onion, Red Wethersfield; Peas, McLean's Little Gem and Champion of England; Parsnips, Hollow Crown; Parsley, Moss, Curled; Peppers, Mammoth Bell; Potatoes, Early Vermont, Early Ohio and Early Rose; Radish, White Turnip; Squash, Boston Marrow, Turban; Salsify; Tomato, Acme. Total cost of the seeds about $1.77.

This list of twenty-five varieties will supply any family with all that is necessary for a good kitchen garden. It will furnish them with more than half their living during summer, and also with a

good variety of healthy food for the winter months, thereby saving many a doctor's bill. The roots intended for winter use should be packed in dirt, in boxes and barrels, in the cellar. Thus kept they are found always in a satisfactory condition, and prove acceptable for daily use.

It has been too much the custom for farmers to neglect their gardens for field crops, depending almost exclusively upon their wives to furnish them with the few vegetables which they (burdened with many other cares and duties) may be able to procure. Any man who expects his wife to do the work that he himself shrinks from, should never have a wife or garden, and should never know the satisfaction of sitting down to a table in midwinter well supplied with nice crisp celery, carrots, cabbage, corn (canned or dried), parsnips, turnips, squash, etc. These things can all be had in abundance by any one who has the ground and determination to secure these comforts for the use of his household.

There is not a farmer present who would not cultivate an extra acre of corn or grain if he could see profit in it. Then why not cultivate a good garden and enjoy all the luxury of vegetables and fruit that God's earth affords us.

MARCH MEETING.

The Society met in their hall in Warsaw on the 21st day of March, 1883. A good attendance of interested members took part in the discussions, the special subject being postponed until next month.

Messrs. C. C. Hoppe and Secretary Johnson gave a brief account of the habits and doings of that pest, the cabbage moth. These gentlemen have been on the outlook, doing picket duty. The Secretary had found a single moth on the move (in the house) on the 17th. Mr. Hoppe had destroyed many in their winter quarters under and along the eaves of buildings.

Mr. A. C. Hammond said: Our old apple trees are giving more evidence of injury as the season advances, and many trees will probably die.

T. F. Leeper said: In my orchard of six hundred trees I have only discovered one tree bark bursted, yet I think I shall have a short crop of apples, as the fruit buds are in bad condition.

Secretary.—Mr. Leeper's orchard was over-cropped last year.

C. N. Dennis explained the difference between the two terms, "bark bursting" and "tree splitting." A burst is usually crosswise, seldom affecting the wood; a split is lengthwise, and often involves both bark and wood. Injuries of this character were reported by several members.

T. F. Leeper said: I am not flattered with my prospect for peaches, and I can discover no difference between the budded and the seedling peach trees; all are very much injured.

C. W. Ames said: Peach trees are in better condition than is generally supposed, in fact, a very moderate heading back will put my trees in very fair condition, but I shall get no peaches this year.

A. C. Hammond said perhaps Mr. Ames had made a superficial examination.

Mr. Humphrey, of Quincy, said: Cut back your peach trees moderately and you will produce a healthy growth of wood, but cut severely and you will injure your trees.

On the condition, value, and qualities of the Turner raspberry, remarks were made by Messrs. Brown, Ames, Hathaway, and Rockwell, of Warsaw, and Mr. Humphrey, of Quincy.

The Turner (as usual) has stood the winter well, and is a berry of excellent quality and of great value for the table or for market. Mr. Humphrey said the Turner is worth two or three cents per quart more than any other berry in the market. The Red Antwerp and the Gregg raspberries were spoken of favorably; they were not badly winter killed.

Mr. Stafford said: If the raspberry is permitted to grow and tip naturally no lateral branches will be formed, but if, in the growing season, it be cut off at two or three feet high, lateral branches will form, and when trimmed again in early spring a good stalky head is made, and stakes or trellises are not necessary.

The Snyder and some of the wild blackberries are in fair condition and promise some fruit; protection by snowdrifts were reported in many instances.

W. N. Grover, moved the adoption of the following:

Resolved, That this Society offer a premium of $5 in cash for the greatest profit to be realized from one-fourth of an acre of land during the year 1883, by a boy under sixteen years of age. The boy to be or to become a member of this Society, or be the son of a member. A report of the kind of crop raised, the manner of cultivation, and the sales or value of the crop, to be presented to this Society.

A. C. Hammond, chairman of Committee on Evaporating and Utilizing Fruits, reported:

A cider- and vinegar-making, fruit- and vegetable-evaporating, canning, and jelly-making establishment is evidently practicable and a pressing necessity in Warsaw, and if well managed will surely pay. Action should be had in this matter at once. Ten thousand dollars and a suitable manager would inaugurate a booming and profitable enterprise in Warsaw, and as fully one hundred thousand bushels of fruit annually goes to waste in our vicinity alone, shall we have it? We shall see.

ON EXHIBITION.

Fine pure apple cider, by A. C. Hammond; large fine winter pears, by Isadore Vancon; and Russets, Winesaps, Willow Twigs and Ben Davis apples, by several members.

A FRUIT-EVAPORATING AND CIDER-MAKING ESTABLISHMENT.

At the March meeting of the Warsaw Horticultural Society, held in this city Wednesday, the committee appointed at a former meeting to consider the practicability of establishing a fruit evaporating and cider making establishment offered their report, which is published below. Time and again we have urged the desirability of such an institution, and it seems almost useless for us to say anything further if what we have already said has not impressed our people with the importance of the enterprise. But as the constant dripping of water will wear away the most stubborn rock, so possibly an incessant prodding will arouse our people to their interests. The season is upon us for work, if we expect to accomplish anything, and if we should go to work *immediately* and push the project earnestly from this day on, we would only have time enough to get the institution in working order to receive the first fruit products of the year.

But here is the report, which gives a full statement of the case:

Your committee, appointed to confer with a citizens' committee in relation to establishing an evaporating, canning, cider and jelly making house, would respectfully report as follows:

The season is rapidly advancing, and unless the enterprise is very soon put in shape it will be impossible to make the canning department a success, as to secure the best results will require contracts to be made with our farmers and gardeners for large quantities of tomatoes, beans, peas, sweet corn, etc.

There also seems to be some doubt in relation to obtaining a practical jelly-maker. We would therefore suggest that for the present efforts be confined to the evaporating and cider making departments, with the expectation of adding the canning, jelly and vinegar making departments when it may seem desirable. The cost of establishing this portion of the business will be about as follows:

Engine	$ 800 00
Power Press, extra heavy	800 00
Two Evaporators	1,500 00
Pump, Shafting, Belting, etc	300 00
Scales, Tanks, Apple Boxes, etc	300 00
Building, say	1,000 00
Total	$4,700 00

Parties with this equipment, which can be managed without an expert, can certainly do a profitable business, as they will be prepared to go to orchardists and buy the entire products of their orchards, putting the largest and best fruit on the market, which will always bring good prices, using the next grade for evaporating, and the small, inferior portion for cider.

The principal drawback we have met with in making sales of cider has been that many dealers and consumers have objected to the taste imparting by boiling. But we now feel assured that we have gained that knowledge that will enable us to put cider upon the market with safety, five or six months in the year, without boiling or using any deleterious drug, and that will be as harmless as soda water or lemonade.

The sample on the table, to which your attention is called, has been on tap nearly four months, and as will be observed gives very little evidence of fermentation.

This manufacturing enterprise is of too much importance to both town and country to be longer neglected, and it is to be hoped that our capitalists and fruit-growers will unite in putting it in immediate operation.

A. C. Hammond,
J. T. Johnson,
J. L. Piggott,
W. N. Grove,
Committee.

APRIL MEETING.

The April meeting of the Warsaw Horticultural Society convened in the Hall, on the 25th, with a goodly number of members and all the officers present.

The report of the committee on

VEGETABLES

being called for, Mr. Hoppe said: The ground is dry and in good condition this spring, and the prospect never better for a fine crop of garden vegetables. When the soil is cold and wet, corn and beans will mould and rot, but if sprouted before planting they grow much better.

SMALL FRUIT.

Mr. Brown, from the Small Fruit Committee, said: Hardy blackberries and raspberries are all right. Black Caps badly killed. Strawberries he is doubtful about. Peach and cherry trees are in a bad condition.

C. N. Dennis thought we had better plow up our Black Caps and replant.

GRASS AND GRAIN.

J. L. Piggot, from Grass and Grain Committee, thought young meadows, particularly those sown last fall on well-prepared ground, looked remarkably well. The great secret in sowing timothy is to thoroughly pulverize and harrow down the soil. He thinks with a favorable season we will have a good yield. Wheat on the prairie looks well, but on the dry, rolling timber soil, it is badly winter-killed.

A. C. Hammond being on the programme for an essay, responded by reading the following paper, which he suggested was more of the nature of a report than an essay:

THE HORTICULTURAL OUTLOOK,

Although somewhat unsatisfactory, promises better than we expected some months ago. True, we shall have no peaches, and very few cherries; but we expect a fair crop of Snyder blackberries and Turner raspberries, and a partial crop of Black Caps and Concord grapes. Strawberries were not in good condition last fall, and we cannot therefore expect a good crop.

But the great fruit crop of this section of country is the apple, and its failure means the loss of hundreds of thousands of dollars. The great interest of the fruit-growers, therefore, centers here. A careful examination of several orchards shows that fruit buds of the principal standard varieties, except Winesap, although not very numerous, are healthy and plump in appearance and rapidly swelling, some of the early varieties being nearly open. The season is now so far advanced that there is little danger of injury by frost. We may, therefore, expect a fair crop of many varieties, unless the low vitality of the trees causes the young fruit to drop. From some sections we hear of great loss by killing and injury of apple trees by the terrible cold of the past winter.

Seeing a notice of the great loss suffered by the Hon. J. M. Dixon, of Oskaloosa, Iowa, one of the largest orchardists in the northwest, I addressed him a note inquiring as to the extent of the injury in Central Iowa, to which he replied as follows:

"I regret to say that our orchards are badly injured, but it is impossible at this time to determine just what per cent. of trees are absolutely killed. On my first discovery of the injury, about three weeks ago, my conclusions were that nine-tenths of my orchard was entirely killed, leaving about fifty trees, beside Willow Twigs, which were slightly injured. The kinds not injured are Red Astrachan, Duchess, Fameuse, Westfield, and Lowell. The varieties seriously injured are Ben Davis, Janet, Jonathan, Winesap, Dominie, Roman Stem, Pearmain, etc. A small per cent. of the Ben Davis show signs of recuperating. It may be that nature will restore a part of these dead-looking trees, but I am unable at this time to see much ground for hope. The main injury seems to be in the bodies of the trees. In some cases the bark is burst, but generally the inner bark and the outer wood are browned to about the color of black walnut, and appears to be wholly dead. As a general rule the limbs and twigs are but slightly injured. The cause of the injury was not, I think, so much from the intense cold of the winter as the condition of the trees when winter set in. We had a very dry July, August and September, and by the last of September the leaves were nearly all off. October set in dry and warm, and our fruit trees were as full of sap when the cold weather set in as they usually are by the fifteenth of April. The intense cold of course ruptured the sap pores, causing

the injury between the bark and wood. I had succeeded, as I believed, in completely mastering our orchard insects, and thought I understood my business, but now feel as though the result of a lifetime of labor and effort to overcome the difficult question of orcharding in the northwest had taken wings and flown away."

Mr. Dixon is doubtless correct in his conclusions as to the cause of the injury, but there is one important point he may have failed to observe. The mean temperature of last summer was much lower than the average, which prevented the proper ripening of the wood. This fact, in connection with the warm wet weather, which started the flow of sap as referred to by Mr. Dixon, made the trees in the worst possible condition to endure the ordeal of the winter. A careful examination of the orchards in this vicinity, over twelve or fifteen years old, particularly on low, wet ground, shows more or less of this discoloration between the bark and wood. The trees will never be what they were before, but if properly cultivated and cared for we think most of them will so far recover as to produce several crops of fruit. Every possible aid should be given to nature in her effort to repair the injury. The most efficient help is good cultivation, and all injured orchards that are in sod should be broken up and carefully cultivated until the first of August, when, if the season be reasonably favorable, they will be found to be wonderfully improved in health."

President Dennis asked: Was the injury referred to by Mr. Dixon caused by the wet of last summer, or the severe cold of last winter?

Mr. Hammond said it was doubtless caused by the peculiar condition of the weather last summer and fall, but thought they would have recovered if the weather had been mild and open.

Mr. Spitz reported many of his orchard trees killed or crippled. About one-tenth of his Ben Davis are injured by the bursting of the bark.

J. T. Johnson reported Mr. Beedle as saying that one-half of his Ben Davis are injured in the same way.

J. L. Piggot asked: Is it not one of our hardiest trees?

President Dennis said it is less able to endure our severe winters than many other varieties.

Some anxiety was manifested in regard to the effect of the late cold snap on fruit buds. All agreed that there was no apparent injury, but thought it possible that freezing the buds might so weaken their vitality as to cause the young fruit to drop.

Mr. Johnson, in reply to questions, said he thought the amount of bloom that most varieties promised, amply sufficient for a good yield. He knew of no reason why we should not have a good crop of fruit.

JUNE MEETING.

The unanimous verdict of the multitude who attended the exhibition of rare and beautiful flowers, and plants, rich and luscious fruits, which covered the tables at Hamilton on the 13th inst., was that just enough had been done in each department to produce the very best effect The decorations were tasteful, the day was delightful, and for five hours the large hall was crowded with admiring visitors, and the fullest extent and highest order of social pleasures enjoyed by all, and everybody was gratified. There was not an imperfect or uninteresting specimen seen in the hall, and no superfluity in the exhibition. Here and there all along the center of the hall were groups of flower stands, frames and vases, and these were all filled with handsome and perfect specimens of rare, rich, and beautiful flowering and foliage plants, and neatly arranged bouquets and cut flowers.

Conspicuous along the west side of the hall were the well-filled tables of C. Leslie, of Keokuk, as fine a collection of plants as can be produced. And along the east side of the hall were the well-kept and carefully arranged displays of Miss Ludington, of Hamilton, and others. A prominent feature of the exhibition was the large number of collections at the north end of the hall, arranged along the entire front of the stage, and with such studied effect as to seldom show two of a variety. A handsome wreath of delicate sprigs of evergreen in-wrought upon a dark ground, in the center of which appeared the initials, J. S. J., the handiwork of Dr. W. H. Githens, of Hamilton, occupied a prominent place upon the stage, and was a most touching and beautiful tribute to the memory of our departed brother, John S. Johnson, of Wythe.

Invited guests occupied the large platform, and were introduced to the audience by President Dennis, who gave notice that all formal exercises would be short.

Reports were made as follows:

On Floriculture, Miss Longwell said that we were evidently progressing.

J. T. Johnson — Our orchards depend much upon the weather in the near future. It is not safe to make an extended report at present. Some fine specimens of the new crop are on exhibition.

H. D. Brown said that for productiveness the Crescent strawberry leads the list of seventeen on the tables.

C. N. Dennis said the Longfellow was the finest strawberry he had this year.

Grain crops, J. L. Piggott said, depend in a great degree upon the weatner. No extended report.

The secretary was authorized to make the usual exhibition of fruits abroad this year.

A rousing vote of thanks was given the ladies of Hamilton for their untiring efforts in floriculture.

Col. Reed and Capt. Anderson, of Keokuk, Iowa, gave a hearty invitation to attend the Old Settlers' meeting to be held in their city on the fourth of July.

W. N. Grover, Dr. Chas. Hay, and A. C. Hammond, Committee on Obituaries, reported the following resolutions:

IN MEMORIAM.

The late J. S. Johnson, the subject of this sketch, was born in Jefferson county, N. Y., October 2, 1818, and died on his farm in Wythe township, Hancock county, Ill., April 28, 1883. His parents' family consisted of five children — four sons and one daughter. In 1843 he emigrated to Rockford in this state, and was employed in teaching school. The next year he went to Adams county, where he was engaged in teaching for the greater part of three years, and while there, on the 20th day of May, 1847, he was married to Miss Judith Booth, who survives him. In the following August he moved with his young wife to a farm near Nauvoo, where he remained until 1851, when he purchased and settled on a farm in Wythe township, where he resided (with the exception of two years spent in Canton, Missouri, where he went to place his children in college) until his death.

But little is known of his history before coming west, but what is known of his subsequent career will justify the statement that his opportunities for culture were above the average. He possessed an

active, inquisitive, and enterprising mind, which, during the entire period of his manhood, was making continued and valuable accumulations to his store of knowledge, and made himself well informed upon many subjects of interest which are too much neglected by our well-to-do farmers. He was a man of earnest nature and strong convictions, and independent in their avowal both in speech and with the pen. He took an active and earnest interest in all matters that tended to elevate the condition of humanity morally, socially, and intellectually, and was ever ready to assist in their advancement. He was one of the members of the first board of trustees of the Illinois Industrial University, and exerted an active interest in its affairs. In his own county he was at one time a member of the county board, and was actively connected with the direction of the public schools of his township. He was a member of the Warsaw Horticultural Society almost from its organization, and participated largely in its work, furnishing many of the most instructive essays that have been published in its proceedings. He was also one of the originators of our Fair Association, and a director therein at the time of his death. He was a successful farmer, a kind neighbor, an affectionate husband and father, a true genial hearted man, who sought to, and did, make this life honorable and useful.

In view of these facts, and that the memory of them may be preserved, it is hereby resolved:

1. That this memorial be spread upon the records of this Society and published as a part of its proceedings.
2. That a copy thereof be furnished to the State Horticultural Society for publication with its transactions.
3. That a copy be furnished to the family of the deceased.

Respectfully submitted,

WM. N. GROVER,
CHAS. HAY,
A. C. HAMMOND,
Committee.

AUGUST MEETING.

The annual picnic of the Warsaw Horticultural Society was held at Wild Cat Springs, Hamilton, Illinois, August, 1883.

In spite of the unfavorable weather a goodly number of horticulturists were present at this charming and pleasant resort, and all were richly repaid for time and trouble. Much of the time was given to social features, but at one o'clock P. M. President Dennis called the meeting to order, and A. C. Hammond read the following

ORCHARD REPORT.

From nearly all sections of the country, east and west, we hear complaints that the apple crop is again a failure, as well as that trees are dying, and countless hordes of insects are preying upon both tree and fruit. In this section all these conditions prevail to a considerable extent, and Hancock County will have a light yield of apples. Orchards are unusually variable in condition. Occasionally a Ben Davis orchard may be found that promises nearly a full crop, while a neighboring one will yield next to nothing.

Among early apples Red Astrachan, Sops of Wine and Golden Sweet produced a partial crop, all others being a failure. Among fall varieties Rombo is doing the best, Maiden's Blush and Porter bearing half a crop. Many of the standard winter varieties have failed entirely. Ben Davis takes the lead in productiveness, and may, if the conditions continue favorable, yield from one-third to one-half a crop of fine large fruit. Willow Twig, Jonathan and Roman Stem will also give us some fruit; but taking the entire orchard area of the county into consideration we do not think that we shall gather more than one-fifth of a crop.

The condition of apple trees is more unsatisfactory than ever before. The long cold winter of 1880–'81 was very disastrous to orchard trees, killing many outright, and so injuring others that they were unable to endure the intense cold of last winter.

Nearly every orchard shows more or less dead trees, and the careful observer will find many others that will never again bear fruit. Geniton has suffered more than any other variety, and we know of several orchards that will be cut down next winter. Winesap has also suffered badly, and we venture the opinion that the sooner they are decreed to be "cumberers of the ground" and devoted to the wood pile the better it will be for the owner.

It is each year becoming more evident that a ceaseless, persistent warfare must be waged against our insect enemies, unless we expect them to take the field. Borers — both the flat and round headed — are increasing in our orchards; the Codling moth is, as usual, destroying a large portion of our fruit; canker worms and leaf-rollers are defoliating our trees; but an insect, to which many apple-growers pay but little attention, is, I suspect, doing more injury in my orchard than all the others combined. I refer to the plum curculio. I have a Ben Davis orchard, about ten years old, by the side of which has stood a peach orchard, the fruit being last year badly infested with curculio. There being no peaches this year they seem to have made a combined attack on the apple, and there is scarcely a specimen in this orchard that does not carry the marks of the little Turk, which makes them rough and deformed and unfit for market purposes. My other orchards show some evidence of their presence, but not in such numbers as this.

One fact or one experiment does not establish a theory, but I infer from the facts above stated that this insect breeds very rapidly in the peach and plum, and when these fruits fail attack the apple, feeding upon it, as well as depositing their eggs in it. This is probably one of the principal causes of "scab," which some seasons destroys a large portion of our apples; and in my opinion the sooner the apple-grower banishes every peach and plum tree from his orchard the better it will be for his pocket.

J. T. Johnson endorsed the report.

C. N. Dennis and Dr. N. Lyon placed on the table fine and perfect specimens of apples and grapes, and Dr. Lyon recommended the introduction, as far as possible, of new varieties of fruit, free from all hereditary taint. He said the incipient cause of disease is often found in the original tree and is transmitted by grafting, and that our potatoes, berries, etc., are all subject to the same trouble.

Mr. Berry said it is the business of our Society to discover the causes of these troubles and thus learn to apply proper remedies, and wet and unfavorable weather, a want of drainage or improper soil, perhaps had their influences.

Geo. O. Hilton said there was very little fruit in Southeastern Iowa this year.

E. Stewart, said: My soil rests upon a stiff joint clay. From planting I force the growth of my tree as much as possible until time for bearing, and when I want fruit I cease to cultivate. To prevent sod from forming I mulch heavily, and let the weeds take care of themselves. I have had a constant crop of apples for fifteen consecutive years. The speaker insisted that some orchardists destroyed the fibrous roots by too close plowing, and that they were the mouths or feeders of the tree.

J. C. Berry did not think our orchards were to become a failure. Wheat grows well in Dakota because of the abundance of alkali in the soil. On our new prairies a quarter of a century ago we had large crops of wheat. Perhaps it was owing to the accumulation of alkali from the prairie fires.

In answer to the question, "Is it a good time now to transplant the strawberry?" Mr. H. D. Brown said, "Yes, if moist weather prevails."

J. L. Piggott reported hay a large yield and in good condition. Wheat a medium crop and in good condition. Oats average crop. Some fields of corn are good, but very many looking badly.

Messrs. Berry, Wilson, Kiser and J. L. Piggott gave their experience with seed corn. The seed grew well; in fact it will be growing still when frost comes. It is three or four weeks behind our home-grown seed. We may look in vain for ripe corn from such seed.

ESSAYS.

"Country Homes and Country Folks," by Mrs. A. W. Robinson, of Wythe, and "Natural Sciences and the Farmer," by Ed. P. Johnson, Esq., of Wilcox, were carefully prepared, well read and highly recommended.

Dr. Lyon congratulated the essayists on so fully meeting the expectations of the audience, and Mr. J. C. Berry said if the value of these papers and the ability of their authors had been known a vast crowd would have filled the grove.

On motion a vote of thanks was given to the essayists.

Adjourned.

JAMES T. JOHNSON, *Secretary.*

COUNTRY HOMES AND COUNTRY FOLKS.

BY MRS. A. W. ROBINSON.

It has always been noticeable that people who live in or near cities or towns have a very unfavorable impression of farmer folks or country people. They know the father only as a hardworking, plodding man, whose interest is divided between crops and cattle; the mother, a mere household drudge; the sons, shock-headed, ignorant, and clownish; the daughters, narrow-minded, coarse, and awkward; the home life nothing but an endless struggle to make ends meet, devoid of comfort, grace and beauty. But the time has come when these wise ones should open their eyes a little and note the signs of the times.

Railroads and telegraph wires have brought town and country so close together that the difference between the two classes has become so small as to be scarcely perceptible. The latest issues of the press, the monthly periodicals, all the literature of the day, are found upon our tables, and in our retirement, are perhaps more in-

tellectually studied and widely discussed than in the rush and whirl of city life; and for convenience, comfort and beauty, our homes compare favorably with theirs.

But let us look for a moment into these country homes, and at these country people, and as the father is the head of the family and one of the lords of creation, we shall first notice him and his relation to the home. Many of them have gained what education they possess by their own efforts; have battled with pinching poverty, lack of educational means, prejudice of class, and many other lions which stand in the way, and while never for a moment despising the labor by which they gain honest bread, are not disposed to consider that working, eating and sleeping are all that are worth living for; that so many bushels of grain, so many head of cattle, so many pumpkins, carrots and potatoes, so many pigs to butcher before Christmas, so many tons of hay to be housed before the fourth of July, all that the year holds in store for them. But each of these carefully attended to, and their daily labor honestly and intelligently performed, they feel themselves to be free citizens in the empire of thought in which men take rank according to what they essentially are, quite independent of their condition. They do not neglect to cultivate the little graces of life, to surround their homes with the little elegances of refinement which, trifling as they may seem, contribute so much to the enjoyment and the cultivation of the tastes of wife and children. They do not leave the entire care and training of their children to the mother, minister, and sabbath-school teacher, but feel that a responsibility rests upon themselves; that they have an influence over them in certain directions which no one else can have; a power to inspire them with a moral heroism which will make them proof against all the seductive influences of vice and immorality, unmoved under the dignified consciousness of rectitude. He adores neatness and the display of good taste in every thing pertaining to his home, is fond of good dinners, an honor to his profession, is proud of his farm, obliging to his neighbors, and in love with his wife.

Next the country woman. If the father be the head of the family, the mother is surely the heart of it, and when head and heart work well together we may look out for good results. The country woman troubles herself very little about woman's rights. She would never claim a seat in the halls of legislation as the place in which to display her talents, nor the scene of carnage as her field of glory, but conscious that she moves in a sphere which requires equal strength of intellect with the other sex, she never feels that her position is one of inferiority. A few woman, very peculiarly endowed, may find happiness in other spheres, but generally it is only in the diversified experience of a well-ordered home that a cultivated woman can find exercise for all her talents and affection. She realizes that our social wellbeing rests upon our homes, and that

in its building the virtue of woman must be its corner-stone, her self-sacrifice, piety, gentleness and cheerfulness the four walls of its superstructure, and, canopied over all, the mother love and wifely devotion which time cannot lessen nor misfortune quench. No nation can become fully enlightened whose mothers are not qualified to discharge the duties of home education. The country woman is usually busy and energetic: she rises early and goes forth to labor with strong heart and willing hands, and as she plants seeds in her garden or flowers in her borders, sows broadcast over the earth and in the hearts of her family the seeds of truth and honesty, good deeds and noble thoughts. She does not consider that household cares are in any way degrading to the noblest woman. Cooking and eating are earnest, urgent things that must have attention; still she will study to hide, in part, the domestic machinery, and letting the beautiful come in with the useful, puts a glass of fresh flowers on the dinner table, even though they do droop gracefully over a plate of boiled beef and potatoes.

Next the country boys — the happiest, most independent members of the human family. They usually have a good dash of Young America in them, and we like it. Restless, eager, wide-awake; feeling like they would burst right open if they couldn't run and laugh and shout and whistle — boys who will make a stir in the world if you will give them a chance. They are considered great pests when little, and when older, a terror to their sisters, who are always getting shocked at their rudeness and out of patience with their carelessness, but who couldn't at all get along without them. They are always willing, helpful, and hungry; their mother's firm friend and ally because they seem to realize that their mother is their best earthly friend. There are very few of them who do not have a soft, tender, genial side to their nature, and mothers can always search it out. A love for flowers, woods and pleasant scenes, and all beautiful things which God has made, is a part of their natures, and a daily ministration to their unfurnished, hungry minds as well as stomachs — a touch to their unformed tastes, and wise reproof of uncouth speech or manner, shall make them more comely than costly garments, and be remembered and practiced in after life when they must be crowded, jostled, and leveled by the great world. Their faces may be tanned, freckled and homely; their bare, soiled feet look large and clumsy, but notwithstanding all a bright, swift, prompt intellect which at first must slake its thirst at the small fountain of the district school, but later will prove to the world how little the circumstances of early life are able to impede the progress of those who are truly great.

And last, but not the least, the country girl — the flower of the family. Like the boy, independent and fun-loving, but unlike him in gentleness and pride — a gentleness without weakness and pride without vanity. Loving everything connected with her country

home, ever ready to share its labors and care for its necessities, and whether her thoughtful love and careful hands provide some tasteful addition to mother's wardrobe, help her father's stiffened fingers with his writing, mend brother's broken toys, she is careful that a large portion of her mind be spent in the improvement of her mind with music, books and innocent amusements. She has an independence of thought and action, an intelligence concerning the general topics of the day, and a practical application of knowledge gained from books which enables her to converse with intelligent and cultured people without embarrassment, blushing, stammering and twitching her fingers, In regard to her home duties and labors we will let the poet speak:

She is up in the early morning,
Just at the peep of day,
Straining the milk in the dairy,
Turning the cows away.
Sweeping the floor in the kitchen,
Making the beds up-stairs,
Washing the breakfast dishes,
Dusting the parlor chairs.

Brushing the crumbs from the pantry,
Hunting for eggs at the barn,
Cleaning the turnips for diuner,
Spinning the stocking yarn.
Spreading the whitening linen
Down on the bush below,
Ransacking every meadow
Where the red strawberries grow.

Singing her tra la la la la
While churning the snowy cream,
Rinsing the pails and strainers,
Down in the running stream.
Feeding the geese and turkeys,
Making the pumpkin pies.
Jogging the little one's cradle,
Driving away the flies.

Grace in every motion,
Music in every tone,
Beauty of form and feature,
Thousands might covet to own.
Cheeks that will rival spring roses,
Teeth the whitest of pearls,
One of these country maids is worth
A score of your city girls.

THE NATURAL SCIENCES AND THE FARMER.

BY ED. P. JOHNSON.

In my brief essay I shall endeavor to show that the natural sciences are not only an accomplishment, when a thorough knowledge of them is possessed by a farmer, but a complete knowledge of their fundamental and unchangeable principles is essential to his ultimate success in the noble avocation he has chosen.

Many men seem to be practical and successful farmers who have but little "book learning." We admit that such *seems* to be the case, but a careful investigation of facts convinces us that what at first sight seems to be a contradiction of my first statement, is really one of the strongest proofs of its immutable truth. What these men are now masters of by means of a lifetime experience could have been acquired in five years — two years given to learning the scientific theories, as laid down by men of undisputable veracity, and three years to their practical application, and I maintain they will be as thoroughly well informed in the practical duties of a farmer's life as any successful old fogy who has spent, not five, but fifty-five years in acquiring a practical knowledge of the same thing. Our lives are much too short to allow any waste of time in consummating any given undertaking.

It would appear most foolish to those who are living in this wonderful age of improvements to see a man forging nails on a blacksmith's anvil, and yet this was not long since the common way. Anything that is a waste of time, "that solemn inheritance to which every man, woman, and child is born heir," is not only foolish, but most injurious to permanent progress. Let us learn all useful science in the least possible time, that our leisure, thus acquired, may be given to some other ennobling purpose.

How many uneducated farmers, do you suppose, are cognizant of the fact that the order *ruminantia*, including in its various families the cattle and sheep which he sees every day, has four stomachs instead of one, as is the case with himself, or with his domestic animals of the order *pachydermata*, viz: his horses, mules, or hogs. He will readily understand that they each, the *pachydermata* and the *ruminantia*, need a different kind of food. Well, we suppose that his father or his older brother had in times past fed them so and so in his presence, and he, as a creature of imitation, and in that respect nearly allied to the monkey tribe, feeds them, and perhaps successfully, too, as his father or brother did in days gone by. Would it not be a source of pleasure to him to know that one has four stomachs, adapted to slowly digesting and absorbing, and a system that will assimilate and circulate the nutriment properties of hay and fodder,

while the other has but one stomach, in which strong nourishment, as our common grains, are most readily digested; and to judge from their different formations of the proper proportions of mixed food to give to each different class of animals in the barnyard. 'Tis true, he knows that the hog will not do well on a diet of timothy hay, or that his horses will not thrive on corn alone, and if you ask him why this is so, he will quite likely reply, "Wall, it 's the natur of the brute, you know." Yes, he has told us the truth, it is the "natur of the brute;" but if he had learned the reason, as taught in the science of natural history, would not the simple act of feeding his stock, which he now does as he has seen others do, assume a new and pleasing importance, quite different from that which he had before known?

The scientist is constantly making grand discoveries, which are soon in daily use by the creature of imitation. Some one will say: "O, a few scientific men will do; we cannot afford the time and money necessary to educate every one, nor do we think it advisable to do so." Now I do not say that it would be an all-wise plan to bring up a nation of philosophers. We shall always need men to plow corn, hoe potatoes, raise stock, and to operate the various mills and factories; yea, even to propagate and produce for us flowers and strawberries. We must still have working people and artisans in every industrial branch; but let each one thoroughly understand his own business in order to produce the most desirable result. The successful farmer of the future must fully understand and appreciate the science of beautiful nature, which in its lavish abundance surrounds him. Was it the creature of imitation, or the man of natural science, who discovered that wonderful system of ensilage destined to revolutionize the whole system of stock-raising in our northern and western states? There are many other noted examples that rise up before us on "memory's golden page." Remember who it was that discovered the science of electricity; who it was that applied it to the electric telegraph; who it was that invented the steam engine, and who applied it alike to boat and car; who it was that invented the phonograph, electric light, and telephone; who they were who have geologically examined our mountains, plains, rivers, and lakes; who they were who have studied into and explained to us the nature and requirements of our various trees, plants, and flowers, who they are who are constantly making grand discoveries in the realms of nature, and as a rule they were not, and are not, professors of Harvard and Yale,—not men who understand perfectly the dead languages—but men who really strove, and are still striving to understand the living language of that bounteous nature spread before them. The fame of Franklin, Morse, Fulton, Edison, Agassiz, Humboldt, Hugh Miller, and the chemist Liebig, will shine with undimmed lustre when even the names of the professors of Harvard and Yale have been forgotten. We intend no slight or slur to be thrown upon these noble and hard working men.

But coming nearer home, let us at least pay one grateful tribute to the lifelong and earnest work of such men as Prof. A. H. Worthen, our state geologist; Dr. John A. Warder, but lately deceased, the noted horticulturist of Ohio; and to T. J. Burrill, of our state university. We and our children shall ever hold their memory dear.

As the great mass of our population must grapple with nature in their daily labor, let them fully understand this same wonderful science. The machinist, carpenter, engineer, and mason must have a practical knowledge of natural philosophy; the florist a full and complete understanding of botany. The stockraiser must fully understand the wonders of natural history and philosophy, while the successful farmer of the future must and can most easily understand them all from the advantage of daily observation. In addition to these he must understand the chemistry and the nature of soils. The soil he tills needs to be fed, nourished and sustained as carefully and systematically as the living animals around him. This is a long subject, just now needing much careful attention, but a subject within itself. There is much for the farmer to learn, but the task is not one of painful magnitude. The sons and daughters of our poorest farmers can, in a few terms well spent in our common country schools learn the fundamental principles on which all natural science is based, at the same time bearing in mind "that there is no excellence without great labor." My young student of nature, you have all of these grand discoveries as a foundation on which to build; go on conquering and to conquer; bend every energy in the pursuit of the life which you have chosen, and the result will most amply repay you.

My farmer friends, let us educate our children in this beautiful science of nature, unrolled as a magnificent picture to our astonished vision. It is so grand a thing and so easily accomplished. Carefully explain to a child of ten years the manner in which a fly walks on the ceiling, how a mosquito is produced, or the manner in which any of our common plants grow, and my word for it, they will retain it longer than the works of fiction or the idle story. It is only a few years since man first knew that he had a stomach, except from the simple act of putting food into it, or even understood the circulation of his own blood. These assertions may seem somewhat strange and startling to those unacquainted with the natural sciences, but they are matters of absolute and undisputed fact. Any school boy or girl who has studied them will readily explain them to you, and the manner in which the careful student of nature has searched them out and made them plain to all.

In conclusion I would say what I have already implied: The farmer, to be successful, happy, and content, must be accomplished in the science of nature, so far as he can, from a careful study of the few necessary books, and then practically apply this knowledge to that bounteous nature which surrounds you, and untold pleasure and

profit will most surely crown your efforts, and make your lives a blessing to all around you.

The student of nature is never a villain. All nature teaches us by intuition of higher, better, and nobler things. So good a piece of advice has been given to us, and so applicable to the present subject, by the Father of our Country, that I cannot forego the pleasure of repeating it on the present occasion: "Promote, then, as an object of primary importance, institutions for the general diffusion of knowledge. * * In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened."

OCTOBER MEETING.

The October meeting was held in the Society Rooms, on the 17th, with all the officers present.

The reports of Standing Committees being in order, Mr. Rockwell, from that on vegetables, said the season had been favorable for the growth of garden vegetables. He had grown and exhibited at the Warsaw Fair sixty-nine varieties.

In response to a call for a report on orchards, Mr. Hammond presented the following:

ORCHARD REPORT.

The record of another season is nearly completed, and to the great majority of fruit-growers it is extremely unsatisfactory. The year 1880 was the great fruit year, and we expected that one season would be required to recuperate the trees after that enormous crop, and were therefore not surprised to find our orchards bare in 1881. But the failure of 1882 was unexpected, as the trees were in good condition and well supported with fruit buds, and can only be attributed to late spring frosts.

After two successive failures we looked forward with the confident expectation of a bountiful crop in 1883. But when in January the mercury sank to 30° below zero, splitting our trees and loosening the bark, we began to have forebodings of evil, but failed to realize the extent of the injury. In the spring nearly all our orchard trees leaved out, and bloomed to a reasonable extent, but soon after the formation of the fruit it began to fall, and by midsummer many of our orchards were perfectly bare. When the hot weather set in many of the injured trees began to show the yellow

leaf, and now in nearly all of our orchards — not only in Hancock County but the entire Northwest — from ten to ninety per cent. are dead.

There have been numerous theories advanced to account for this wholesale destruction of orchard trees, the most common one being that it is caused by wet feet, from which opinion we beg leave to dissent.

We find some orchards on flat, wet land, that are killed outright, there being scarcely a healthy tree left, like those in the northeast part of Wythe Township, belonging to Mr. Berry and Mr. Shepherd, while on the other hand we find orchards just as badly killed on rolling timber soil like that of Capt. Hill, in Wilcox Township. The few fruitful orchards we have this season are also about equally divided between wet, flat, and rolling sites. Those of W. J. Ash and Wm. Gray are on very flat land, the soil being black prairie loam, while those of Geo. P. Walker, Wm. Ayres and H. and S. J. Hammond are on well drained and lighter colored soil. My own orchards are planted on both thin, well drained, and rich flat land, and on the latter site I find the most healthy and productive trees. I have also for twenty-five years been cultivating pears, and have had more fruit and less blight on flat, moist land, than on high, dry ridges.

I do not wish to have it understood that I would recommend such locations as being the best for orchards under all circumstances, but give the facts as they have have come under my observation that others may draw their own conclusions.

Another theory in relation to this destruction of trees — and perhaps the most plausible one — is that they ripened up their wood unusually early last fall, and that the warm, wet weather of October and the early part of November started the flow of sap, which of course was frozen by the intense cold of the latter part of the month. The effect of this freezing was to loosen the bark from the trees, causing a lingering death. A serious objection to this theory is that the Janet, which is the last variety to start in the spring, and should have been more backward, and therefore less injured than others, was nearly swept out of existence last winter.

The conditions that caused this disaster seem to have never existed before, and we may reasonably hope that they will not again, at least for many years.

Trees that were in a vigorous, healthy condition, seem to have suffered less than others; and, in my opinion, the most successful mode of counteracting the effect of our long, cold winters, is to so cultivate and enrich our orchards that the trees will remain thrifty and vigorous. A half starved, sickly tree, can no more endure the vigor of our winters than a half starved sickly horse or cow.

The best we can do with our orchards is to cut out the dead and dying trees, and, if they are not more than ten or twelve years old,

replant. But at any rate carefully cultivate what are left, and it will be found that the smaller number well cared for will be more profitable than the larger number left to themselves.

Mr. Rockwell agreed in the main with the report. He found a great many dead trees in his orchard, but thought a portion had been killed by borers, but the death of most of them must be attributed to the cold winter. His Janets and Newtown Pippins were all dead. He intends to seed his orchard to clover next spring, and permit it to fall down and remain on the ground as a mulch. He thinks an orchard managed in this way less liable to be injured by drouth or frost than if carefully cultivated.

Mr. Spitz had trees on a low, wet piece of land, that received the wash from the surrounding slopes, that were all dead. He also had them on his highest ridge, and they were also dead. He therefore infers that we know but little of the conditions that caused the death of so many trees. We find them on both wet and dry land, and we must look beyond this for the cause.

Several members wanted to know what the indications were for next year's fruit crop.

Mr. Dennis replied that apple and peach trees were well supplied with fruit buds, and we might reasonably expect a full bloom.

Mr. Rockwell asked: Is there any reason why we cannot collect and make the finest exhibition of fruit at our next fair ever seen in the Western States.

Mr. Johnson said it meant time and hard work, but it could and should be done, and he would render it all possible aid.

Mr. Hammond thought we had so often demonstrated our ability in this direction that the only question is, will our horticulturists give the undertaking the time and attention necessary to make it a grand success? He favored the project, and would lend it a helping hand.

Mr. Dennis heartily favored the plan, but thought it best to postpone action on it for the present, but in the meanwhile keep it in mind.

A fine collection of apples was on the table, exhibited by John Spitz, J. T. Johnson, A. C. Hammond and C. N. Dennis. In the collection of Mr. Dennis was a seedling, resembling Ben Davis in size,

color, quality and general appearance, grown by T. Harlan, of Canton, Missouri. It originated in the orchard of Mr. Shackleford, near Athens, Missouri, and is highly prized where known. Mr. Harlan says the tree is more hardy and the fruit a better keeper than the Ben Davis. If, on further trial, this proves to be correct, it will be a valuable acquisition to our apple list.

Mr. Johnson presented an apple handed him by Mr. Hall, of Stephenson County, for name. It was recognized as Ladies' Sweet. Also one handed him by Mr. Cooper, of Kankakee, supposed to be a seedling.

Adjourned to the third Wednesday in November.

NOVEMBER MEETING.

It is a real pleasure to notice a meeting at once so large and interesting as the one which convened in Horticultural Hall, Warsaw, last Wednesday. Live horticulturists from various parts of this county and elsewhere.

Our neighbors from Missouri and Iowa added some of their new apples to the fine exhibitions made by Messrs. Ames, Rockwell, Dennis, Brown, Leeper, Walker, Hammond, Johnson, Spitz, and others. Magnificent Spys, Ben Davis, and Bellflowers, luscious and tempting Jonathans, Fultons, Goldens, etc., covered the tables. The large and fine-looking New Shackleford apple, from Clark County, Missouri, was conspicuous. It looks much like the Ben Davis, from which it is said to be a seedling and from which it takes its chief characteristics. It is worthy a trial. Other new seedlings were before the Society for examination and discussion, and on which a future report will be made. An interesting feature was the beautifully-colored hybrid apple gathered by J. T. Johnson and T. J. Blake from a Ben Davis tree, the branches of which were interwoven among the branches of a tree of the Fameuse. This apple was clearly marked upon one side as a Ben Davis, and just as clearly marked upon the other as a Fameuse. It will be taken with the other fine specimens of our local fruits to the winter meeting of the Illinois State Horticultural Society at Bloomington, on the 18th of December.

Among the live and energetic horticulturists who attend our meetings no effort seems too great in furthering the interests or profits of fruit culture.

A. C. Hammond reported on the work of the curculio in the apple orchards. Much of the gnarly and rough appearance on the apple is the result of the work of this fruit pest.

Mr. Hilton, of Lee County, Iowa, had carefully noted the work of two species of curculio among the apples.

Mr. Spitz said it took an early riser to note the work of the curculio.

T. F. Leeper said the season of 1883 was peculiar in many respects. He had never noted the work of this pest in apple orchards until this year. With one or two exceptions last winter was an ordinary one, and yet, as soon as spring was fairly open, the bad effects of the weather was made manifest both in tree and fruit. Then during the present year we have been overrun by the common field mouse, and many of the trees now supposed to be winter-killed have been girdled below the surface of the ground by these mice.

J. T. Johnson said small mounds of earth about the trunks of the trees often prevents the ravages of these mice.

Mr. Spitz said it was the unfriendly weather which had done the damage in his orchard. "I can ward off the mice, but cannot prevent the sudden changes of weather."

C. W. Ames said, "My friend Bickford has destroyed mice in his orchard by poisoning wheat with arsenic and putting around his trees."

C. B. Rockwell said proper cultivation keeps off the mice and much of the other vermin which infests the orchard.

W. W. Chittenden said the great foe to his orchard seemed to be changes of temperature or a bad location, as he had derived but little benefit from it, and all of the doctors who have prescribed have so far failed. His location or something else was against him.

G. P. Walker said: Cultivate your orchard the first six or seven years thoroughly and prune but little, if any; keep off the rabbits in winter by putting a little blood on the trunks of your trees. After your orchard is seven years old seed to clover and your orchard will pay.

J. L. Piggot said we had better be warned in time. Our corn crop is a very poor one, not better than last year. Corn will not keep in bulk: it will heat and sour. But a very small portion of the crop is sufficiently matured for seed, and the germ in that is weak. We had better look to the seed corn at once and not wait for spring.

Messrs. C. B. Rockwell and C. Fletcher brought up the subject of green crops for fertilization, and recommended the sowing of rye among the corn at the time of the last plowing. It will make a good and cheap pasture for winter and spring. You can then plow under the crop in season for corn. It is the cheapest kind of a fertilizer.

President Dennis and G. Hilton, of Keokuk, asked for a report to be made next month as to the number of orchard trees growing last year, and of what varieties, carefully noting the dead trees of each variety.

On motion, Messrs. Spitz, Leeper and Rockwell were elected delegates to attend the Illinois State Horticultural Society at Bloomington, December 18th to 20th.

On motion the Society adjourned to meet in Warsaw the fourth Wednesday in December.

DECEMBER MEETING.

The annual meeting of the Warsaw Horticultural Society was held at Warsaw, December 26, 1883.

At one o'clock the room was comfortably filled with ladies and gentlemen, and the tables showed some fine specimens of excellent home manufactured sorghum.

President Dennis called for reports of committees, and the following were handed in:

On finance, by C. C. Hoppe, Treasurer, showed cash on hand of $101.35 and no indebtedness.

C. B. Rockwell made the following report, for the year 1883, on

VEGETABLE GARDENING.

All those who had their lands well drained, fertilized and prepared, had fair success, while in low and wet situations affected by cold rains, the finer seeds were destroyed. We must not think that good land alone will insure a good garden; a good garden requires constant care and attention. To me it seems strange that there is yet so large a proportion of farmers and others who have poor gardens, or none at all; and especially when it is susceptible of ready proof that one acre devoted to gardening and vegetable growing is worth more to the average family than any five acres of corn. And if your land is properly laid out for horse cultivation, one acre of garden can be cultivated at about the same cost as two acres of corn. There is no excuse for farmers to want for a winter supply of potatoes, carrots, parsnips, salsify, celery, parsley, cabbage, turnips, beets, etc., as all who will can have them for the effort. When the weather is cold and wet like the past spring, all plants that grow from small seeds need special attention. You must plant with care, and shallow, and then rake the ground over the rows to break the crust and let the weak and tender plants through the surface. In order to escape the depredations of the cabbage worm we planted our cabbage at the earliest possible opportunity. The result was good. Next year I hope to succeed with late cabbage, as our worthy secretary has this year, by sprinkling or spraying them with a solution of common alum water after each rainfall. Let us have cabbage. I would not forgot to speak of the Lima bean. It is such a welcome addition to the table supply, and is one of the most easily grown vegetables. And the squash; let us have plenty of squash. They require a good rich bit of land, but not much of it, and no extra amount of work, and if cared for in time you may have good squash all winter in your cellars. Let us have better gardens.

J. C. Berry said Mr. Rockwell had evidently learned to till his land in a labor-saving way, as most people give a much greater proportion of labor per acre. Let us learn to save labor in the management of the garden.

Messrs. Hammond and Dennis said that Prof. Forbes and others had already discovered a parasite of the cabbage worm, and that where introduced it had annihilated this pest. We shall hail its appearance.

John Berry said that the many valuable papers read before this Society led to discussion, investigation, and successful experiment. Speaking of squashes, the speaker had raised them weighing eighty

pounds the present year, and to-day Warsaw and vicinity could make an exhibition of fine vegetables which could not well be excelled.

H. D. Brown said: We must not forget the advantage of situation for an orchard or garden. The garden of Mr. Rockwell is on rolling bluff land, and his soil is rich and mellow in leaf mould — an excellent condition for garden soil.

On orchards T. F. Leeper said: Along the bluff region from Warsaw to Quincy much the largest per cent. of apple tree loss during the past year had been from girdling by mice — more the result of neglect than the weather.

J. W. Ash, of Wythe, reported a small loss in his orchard from the effects of winter and mice. His orchard is in favorable condition and prospects good for 1884. Mice work where there is trash or some such protection.

W. W. Chittenden reported a loss of fruit trees as follows: Janet, 6 per cent; Ben Davis, 8 per cent; Winesap, 40 per cent; Maiden's Blush, 40 per cent; and no difference in condition or cultivation. His orchard must be unfavorably situated as his success is unsatisfactory.

C. B. Rockwell reported the following loss of trees: Winesap, 204 trees, loss 1½ per cent; Janet, 116 trees, loss 16 per cent: (all old trees); Ben Davis, 750 trees, loss about 5 per cent; Wythe, 15 trees, loss 6 per cent; Red Canada, 60 trees, loss 4 per cent; Rome Beauty, 6 trees, no loss; White Bellflower, 8 trees, no loss; Yellow Bellflower, 6 trees, no loss; Benoni, 2 trees, no loss; Rambo, 6 trees, no loss; Maiden Blush, 20 trees, loss 15 per cent; Jonathan, loss 6 per cent; Peck's Pleasant, loss 25 per cent; Newtown Pippin, loss 100 per cent; Fall Wine, Early Harvest and Red Astrachan, no loss. My average loss is about 5½ per cent. for the whole orchard, and all trees under seven years old were killed by either mice or borers. I am sorry to make this admission, as it signifies neglect. As to the death of older trees I am not quite sure that it is all the result of winter.

Messrs. Dennis, Brown, Berry, Walker, and others discussed the orchard report at length, showing that very much of the apple tree loss of 1883 was owing to mice, borers, diseases, and weather changes other than winter, and that the heaviest loss had fallen upon the Rawle's Janet.

Messrs. G. P. Walker and John Berry ventilated the question of pasturing the orchard with swine, and held that it was a bad practice if much persisted in.

On berries and small fruits H. D. Brown said many new plantations will be made the coming spring. Those of the current year also are doing well.

Mr. F. T. Leeper reported the following notes of the season for 1883: January, cold above the average; February, remarkable for rain and floods; March, cold and dry; April, warm and dry; May, cold rains and frosts; June, first half very wet, last half fair; July, first week hot, later favorable; August, days dry and warm, nights cool; September, first half dry and warm, last half favorable for seeding; October, first week fine weather, second week warm, last half rain and damp weather prevailed; November, warm for the season, rainy and moderate weather, with one blizzard; December, first half mild, last half an average winter month.

REMARKS.

April and May were unfavorable for the apple orchard, producing blight in the bloom and scab in the fruit. Cool and moist weather during April is always favorable to the proper development of fruit buds, and the establishment and recuperation of the winter wheat crop.

President C. N. Dennis read his annual address, after which the annual election of officers took place, resulting as follows:

President—C. N. Dennis, of Hamilton.
Vice-President—H. D. Brown, of Hamilton.
Treasurer—C. C. Hoppe, of Warsaw.
Secretary—J. T. Johnson, of Warsaw.

On motion it was ordered that the newly elected officers for 1884 be a committee to prepare a new programme for the year, and report to the next meeting for approval or revision.

After testing the fine samples of fruit on exhibition, adjourned.

ANNUAL ADDRESS OF PRESIDENT C. N. DENNIS.

In any new undertaking or new departure we ask or think "What will the harvest be?" And at the close we might well consider, What has the harvest been? Another year has rolled around and brought our annual reunion, and the kindly touch of the hand and friendly glance of the eye enables us to think less despondently of our failures, and more gladly of our successes, during the past very discouraging year. What is the reason of our existence as a society? Is it not to learn and disseminate how to prevent, remedy or ameliorate the results of just such years as this, or, if this is impossible, to teach perseverance until we outgrow them. Again, our work is to discover and disseminate better methods of planting, sheltering and beautifying our grounds and homes; of growing, gathering, storing, utilizing and presering fruits. Also the duty of promulgating these and educating our generation up to a realization of their importance and value.

Are we doing this? An inquiry to the New York *Sun* last summer from a party in Missouri, as to what to plant, was referred to the Warsaw Horticultural Society as the best authority known by the editor. A. C. Hammond's paper on Orchards was greeted far and wide as reliable, and numerous other examples might be cited. And this brings the inquiry, are we doing our duty in informing ourselves so that really intelligent answers can be given to the numerous inquiries that do and will come to us from time to time? Or shall we be "blind leading the blind?"

We are called to mourn the loss of one of our intelligent members, J. S. Johnson. A close observer and careful experimenter, he had become almost indispensable to the Society, and leaves a vacancy in our ranks hard to fill. And how are we to fill our ranks as these vacancies must and will occur? On whom are our mantles to fall? Where is the young man to assume and fill the place of the lamented Johnson? Methinks I can hear him from the other side urging us to do more and better than when he was with us.

In our orchards the harvest has been mainly of trees destroyed by the combination of circumstances of the two past years. These must be replaced by as good or better varieties, and cared for as best we can from the knowledge we now have, or can obtain, to the end that we advance instead of retrograde.

Our calling is a noble one and worthy of our best efforts. We are, as yet, hardly on the threshhold, and until we are masters of the situation, have carried and can "held the fort" against insect and blight, field mice and rabbits — in fact, against every depredator of our orchards, fields, and gardens — will our work be completed and we be allowed to lay off the harness. It is by united effort that we

can accomplish the best results; by laboring together, and giving to each other the results of our experiments.

The year has not been what we probably wished for, yet not entirely discouraging for fruits. Buds are plentiful and in good condition, and with the prospect of a mild winter, if we do our duty in combating the insects, we may reasonably expect a fair crop of fruit the coming year. Our list of desirable trees and plants is not what they should and may be, and in order to lengthen the list we should experiment with seedlings, cross-fertilization, etc., retaining the worthy and rejecting all others.

The apple is the most popular, the most diversified, the widest spread, and most generally used of any fruit in America, if not in the world; and facts have proven that we are favorably situated for its production. But we often hear the cry: "no profit, apples won't bring anything," etc. Is this so? And if so, why? Did you ever think that not a year rolls around but what from five thousand to fifty thousand barrels of apples are shipped from Michigan and other points into Central Illinois — almost to our very doors? And why? Because better, less worms, etc. We raise peaches and take what the worms leave. Do you know of a man in our Society that regularly jars off and destroys the peach curculio? Don't complain of over-production until you can supply your own market with good fruit. Good fruit will always sell; it is only the poor grades that go begging.

In conclusion let me again urge thorough and united systematic labor combined with careful, intelligent observation and experiment, and I will insure good results. Thanking you for your indulgence and encouragement, I close my annual.

PROCEEDINGS

OF THE

ALTON HORTICULTURAL SOCIETY.

FOR MARCH 1884.*

Reported for publication by WM. JACKSON, Secretary.

The Alton Horticultural Society met in the office of Captain E. Hollister, March 1st, 1884, G. W. Tindall in the chair, and notwithstanding the rough weather there was a very good meeting. Several new members of promise were there, and they seemed to take a lively interest in the proceedings.

The minutes of the February meeting were read and approved except a part of a statement made by Mr. Riehl in regard to pruning peach trees, in which he was made to say that "he would cut back half the new wood." To be changed to read as follows: "Cut back to two or three buds of last year's growth, so as to form a good head."

ORCHARDS.

Mr. Hollister—Reported no change from the report of last meeting in this location. In Arkansas, however, peach buds are reported damaged from a late freeze after the swelling of the buds.

Hon. John M. Pearson—Mr. President: At our last meeting we discussed the method of caring for our frost-bitten peach trees, and I have since taken pains to look over the proceedings of the State Horticultural Society relative to the same subject. On the first of May, 1864, the then Secretary of that Society, Hon. W. C. Flagg, with his wonted care, prepared a circular which was sent to almost every county in the state, asking for information as to the effect of the extreme cold of Jan. 1st and 2d, 1864. Mr.

* We are sorry to announce that this is all that has been received of the transactions of this venerable society. The Hon. Marshal P. Wilder years ago bestowed upon this society a high compliment, by declaring it to be a "model of its kind," and the minutes of the meeting here given prove the old society to be in full possession of manly vigor and usefulness.—SEC.

Flagg states in his annual report that answers were received from twenty-seven localities. This information would be interesting now to us, but owing to the low state of the treasury of the Society at at that time it is not reported in the little volume of proceedings of that year. Following the severe cold of January, 1873, I find that many apple trees are reported as "doing poorly," and also that many died outright. Peach trees that survived did well the following year.

Mr. C. S. Copps, of Logan County, writes for the report of 1874 as follows: "Of peaches we had a very fair crop, but it is probably the last crop that will be obtained from trees planted previous to 1871. The younger trees seem to be in good condition."

Dr. M. M. Hooton, of Centralia, reports: "The effects of the severe winter of 1872–73 were such as to convince many of us that a very large percentage of the peach, cherry, apple, and pear trees of the country would die. This has proved true only in part. Old peach trees that bore heavy crops the year before, died, but young trees have recovered in a remarkable degree, and have borne good crops the past season. This, too, when the bark was entirely separated from the wood of the body of the trees from the ground up to the limbs. Still more remarkable is the fact that the bark has never formed any attachment to the wood of the body of the tree, but has continued the tree-growth by new deposits of wood in the inside of the bark, in many instances having a fissure of an eighth of an inch between the new and old wood. Cherry and pear trees have only partly recovered. Apple trees have recovered. * * The only effect of the injury of winter before last is apparent in the increased brittleness of the limbs, and a discoloration of the wood."

Mr. John R. Fall, of Hancock County, says: The effect (of the cold in '73) was such that it killed a great many bearing trees. In two of my orchards * * * it killed and greatly damaged at least half the trees. (apples).

Jno. M. Pearson — These statements confirm so decidedly the opinions expreseed at our last meeting that I have thought it worth while to reprodnce them, and if it were not for taking up so much of our space would reprint the advice for last month.

Mr. Pearson suggested that the present, or as soon hereafter as possible, is a good time to set out apple trees; would prefer home-grown trees, and those especially from the nursery now, and would also recommend planting pear trees every year.

Mr. Riehl — Would advise planting peach trees every year where practicable, and apple trees every five years; is going to propagate the Kieffer pear extensively.

Mr. Jackson — Thinks it is a mistake to plant orchards on poor ground, or on land that has been exhausted by previous crops of any kind.

Mr. Pearson stated that Madison County was only credited in the Assessor's report (as published by the State Agricultural Board) with one hundred and twelve acres of peach orchards, whereas, there is more than that amount in the Township of Godfrey alone.

(There are other discrepancies in the above report, but they relate to agricultural more than horticultural products.—*Secretary.*)

SMALL FRUITS.

Mr. President:

As the spring will soon be here your committee begs leave to offer a few hints on planting.

For strawberries the best piece of land on the place should be selected. If it has not been previously done it should be well enriched, for you must not expect to raise fine berries on land that will not grow Yankee beans. There is such a thing as getting ground too rich for berries, but the majority are not apt to err in this direction.

In plowing the soil should be worked to the depth of twelve or fourteen inches. To do this it will be necessary to use a sub-soil plow.

For the matted row system I would have the rows from three feet to three feet eight inches apart, depending on the variety planted, the wider rows for the ranker growing sorts, and about sixteen inches in the row. Use a line to plant by. Open the holes for the plants with a spade by pushing it into the ground about six inches and moving it backwards and forwards, leaving a slit about one and one-half inches wide on top and six inches deep. Spread out the roots and carefully insert, pressing the soil very firmly against them. Plant the varieties best suited to your soil and method of cultivation, which can only be told by actual trial.

When planting blackberries and raspberries in the spring, if the plants are to be procured at a distance, the sooner they are in the ground the better; but when they can be dug and planted soon after, I have succeeded best by waiting until after the buds have started. All old wood should be taken out now. I prefer to postpone pruning bearing canes, until after growth has started, then one can tell just what to cut, and what not.

Have rows for blackberries at least eight and better ten feet apart, plants two feet apart in the row; six feet by eighteen inches will give sufficient room for raspberries.

Respectfully submitted, J. S. BROWN.

The Secretary stated in reply to a question by Mr. Riehl, that he had not pruned any raspberries yet, and would not do so for some time, as he thought that the laterals of the black raspberry, being naturally fast in the ground at this time, had a tendency to steady the main cane and hinder it from being broken off by the wind; the canes being apparently more brittle during extreme cold weather. He also left the dead canes in the rows of red raspberries for a similar purpose.

Mr. Riehl — Will not prune till buds begin to push out in spring.

ORNAMENTAL PLANTING.

At our last meeting we said something about this matter, but as it was not written down our Secretary did not publish it, and he did right. It was about like this: That in cities and villages where soft coal is used for fuel and the streets undermined with leaky gas mains, it is of no use to set evergreens. They look pretty for about three or four years and then get ragged and die. Much money is wasted and the ground occupied to no advantage. When the State Horticultural Society met in Springfield a party of us walked around the city, and I, being familiar with the locations, acted as guide. We found many fine residences and evidences of taste in horticultural matters; a greater number of shade trees in finer condition than in any city that I know of in the state — (I don't count Chicago) — but among them all not one respectable evergreen twenty feet high. Those that managed to live looked like an American Larch in winter — no rich color and no density.

In shade trees for city or country, who will name the second to the Elm? Since our last meeting the Massachusetts Society and the editor of the *Country Gentleman* have both discussed this same question and rejected trees that we rejected, and for the same reasons. Their list, and it is good for us, is about this: Norway Maple, European Linden, Sugar Maple, White Oak, Sweet Gum and Cut Leaf Birch, this last only for an open space on the lawn where its peculiar, airy drooping form may be seen. In order to show this best, train

the tree with a low head. In the country we still must plant evergreens. No new kinds are needed here for common use. Don't forget the hemlock, and remember, if it grows unevenly, that it will bear the shears, if used early in spring before the buds swell. There are very fine specimens of this best of evergreens on the grounds of James G. Brown, Esq., in Godfrey, covering an area of sixteen feet in diameter. They, too, need the shears to-day. If you have not plenty of shrubs, get them. Any of your neighbors who have them ought to be able and willing to divide.

Will some one tell me if the American Ivy (*Ampelopsis Hederacea*) will injure a brick wall?

More next month. JNO. M. PEARSON.

Mr. Pearson suggested an exchange of ornamental shrubs and plants among the members of the Society.

The committee on places of meeting asked for further time. Granted.

Messrs. Brown and Tindall each paid one dollar membership fee.

On motion the meeting then adjourned.

WM. JACKSON, *Secretary.*

THE ANNA FRUIT-GROWERS' ASSOCIATION.

ORGANIZED MARCH 1, 1884.

OFFICERS: — *President* — John B. Miller, Anna.
Secretary — Dr. J. H. Sanborn, Anna.

THE COBDEN HORTICULTURAL CLUB.

ORGANIZED JANUARY, 1884.

OFFICERS: — *President* — Henry Eads, Cobden.
Secretary — Theodore Goodrich, Cobden.

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